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COMPUTERWORLD

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No grass growing under RS/6000's feet as IBM vows speedy enhancement schedule. Page 61.

Retailers try EDI hard sell

BY ELLIS BOOKER
and MICHAEL FITZGERALD
CW STAFF

After years of cheerleading about the paperless benefits of electronic data interchange, two of the nation's largest retail chains have taken a tougher stance, informing their thousands of suppliers to get with the EDI program.

Suppliers working with Wal-Mart Stores, Inc., the nation's largest EDI user, and K Mart Corp. have been scurrying for the past several months to implement EDI capabilities before summer deadlines set by the retailers. Likewise, Sears, Roebuck and Co. has been pushing EDI onto its trading partners, although less aggressively.

The retailers, while stopping just short of making ultimatums, have strongly implied to trading partners that EDI capability is a prerequisite for a long-term relationship, according to suppliers.

Although Wal-Mart and K Mart have been pushing EDI for a long time, "what's happened, I think, is they're getting more insistent," said Richard C. Norris, the EDI practice leader at Arthur D. Little, Inc. in Cambridge, Mass.

Norris said the move toward standard protocols by all the big retailers, which had previously used unique and proprietary systems, has given suppliers less of an excuse for putting off EDI technology. Meanwhile, he said, small suppliers can choose from a number of personal computer-

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High-wire act

EDI is moving into the mainstream as large companies push suppliers to adopt the technology

*Estimated

Source: International Data Corp

CW Chart: Tom Monahan

Users give Repository early OK

BY ROSEMARY HAMILTON
CW STAFF

Two early users of IBM's Repository Manager said the software is far from complete, but what exists so far seems to be in good working order.

"It's a noble first step with a long way to go," said Emmanuel Ackerman, manager of data administration at Depository Trust Co. in New York.

Depository Trust and Merrill Lynch & Co. have been working with test versions of Repository Manager/MVS, the cornerstone of IBM's AD/Cycle strategy, since March. Both companies said it delivered what they expected — basic functions that have allowed them to get familiar with the AD/Cycle world.

Repository Manager is the critical piece of IBM's application development plans because it will one day govern all phases

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Playing the field

CA sketches its repository plan with IBM, DEC coexistence in mind. Page 125.

Lotus steps up interface war, but Microsoft may reap spoils

BY PATRICIA KEEFE
CW STAFF

An emboldened Lotus Development Corp. unleashed its legal hounds on two more spreadsheet competitors last week, but users of the rival products remained unruffled. Meanwhile, observers said Lotus' recent software copyright victory could have the inadvertent effect of strengthening Microsoft Corp.'s control over the microcomputer software industry.

After scoring a copyright win over Paperback Software International, Inc. two weeks ago [CW, July 2], Lotus moved quickly last week to slap both Borland International and The Santa Cruz Operation with infringement suits. The spreadsheet maker charged that both developers have copied the Lotus 1-2-3 commands and menu structure "virtually in their entirety."

An alert Borland managed to beat Lotus to the punch, filing suit first for declaratory relief in California. That action may touch off a battle over jurisdiction. Borland has asked a judge to rule that its Quattro Pro does not infringe on Lotus copyrights, while SCO has filed a similar suit.

Although SCO Professional is considered by some to be a 1-2-3 knockoff, a spokeswoman said the suit was a surprise, citing a long history with Lotus that reportedly included helping to bring 1-2-3/Unix to market.

Continued on page 124

Blind IS managers defy career odds

BY JEAN S. BOZMAN
CW STAFF

DENVER — McKinley Young has never seen a computer. Yet, during his 22-year career in the information systems division of the U.S. Department of Veteran Affairs, he has supervised applications development, served as an assistant division chief and managed as many as 80 IS staffers. Today, he writes multimillion-dollar requests for proposals for hardware and software purchases.

Young, 57, has done all of this despite the fact that he lost his sight as a result of a football injury at the age of 18.

"Sometimes, I think it was easier for me, as a blind person, to go into data processing than it was for many sighted people," Young asserted here last week while attending the American Council of the Blind convention, which drew 2,000 of its 20,000 members. "As a blind person, you have to be organized about almost everything you do, from remembering where you put your keys to remembering what people have said to you. And that's what data processing is all about — being organized, being structured."

Patricia Barry Levy

Blindness *didn't stop Young from climbing the IS ladder*

However, Young, an activist for blind IS personnel, is one of the few IS professionals who have risen to top management jobs. Now a supervisory computer specialist, he is one of 4,000 blind information processing professionals in the U.S., according to the ACB, and one of hundreds of blind IS specialists in the federal government. The government appears to have the lion's share of blind data processors, ACB officials said, because of federal laws requiring equal access to

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Quotable

"It should be going at about 25% of the price, because it has about 25% of the functionality."

NEIL FERRI
MERRILL LYNCH

On the pricing for IBM's Repository Manager/MVS. See story page 1.

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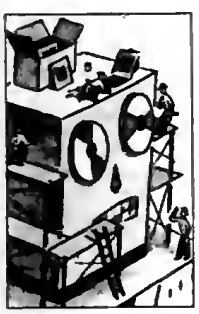
That was some coffee break! How much time do you think today's busy exec wastes on unnecessary activities? If you said 3½ months per year, you're correct, according to a recent survey by Accountemps. The time lost to the bureaucracy monster breaks down approximately this way: Two months attending unnecessary meetings (remember the meeting to discuss rules for the Super Bowl pool?); one month reading and writing unnecessary memos (like all the 'Dear Lunkhead' memos written to your boss and then ripped up); and two weeks waiting on hold on the phone (that was your one call to Moscow).

Dave Bradley

Burlington Coat's Michael Prince finds that being a Unix pioneer means some standards setbacks. Page 76.



Learn what a data center makeover can do for your IS life. Page 91.

EXECUTIVE BRIEFING

■ **It can be risky business** to use advanced technologies for IS projects, but these technologies can also prove extremely beneficial. By doing your homework and anticipating objections, leading-edge projects can be sold to management, as David Carlson, senior vice-president of corporate information systems at K-Mart, has learned. Three years ago, he made a pitch for an advanced satellite network worth $40 million to $50 million. Today, it links 1,900 stores to corporate headquarters. **Page 85.**

■ **'A noble step with a long way to go'** is how one early user of IBM's Repository Manager/MVS describes the cornerstone piece to IBM's AD/Cycle strategy. As a few of these users spoke about their experiences, IBM's software rival, Computer Associates, outlined its own repository strategy, one that emphasizes coexistence with IBM and DEC. **Stories, pages 1, 125.**

■ **Is your data center a cost center?** Is staff responsiveness at an all-time low? If you need to cut data center costs and improve service, then think about restructuring. Payoffs include cutting staff 40% to 80%, slashing cost per MIPS 30% to 60% and boosting staff availability 2% to 5%. **Page 91.**

■ **When BDM International** won a $210 million U.S. Air Force contract to deliver 4.2 million lines of custom software, the company seemed to have bitten off more than it could chew. High error rates and poor documentation shamed BDM and angered its customer. Three years later, productivity is up 30% and errors are down 94%. CASE tools, work teams and project reorganization were the keys to success. **Page 97.**

■ **Mentors make a difference** at Merrill Lynch & Co., where a group of IS professionals say a 2-year-old mentoring program has provided a boost in dealing with work and career issues. Participants say the program has helped them deal with layoffs, set career goals and identify training needs in technology, business and personal growth. **Page 106.**

■ **IS managers whose equipment needs exceed their budgets** should know that there is financing available despite an uncertain business environment. Besides conventional bank loans and leasing, options include asset-based lending, sale-leasebacks, factoring and subsidized loans for socially responsible endeavors. **Page 114.**

■ **Tired of dealing with custom interfaces,** four insurance carriers and two leading insurance agency automation vendors are forming a new company that plans to sell a PC-based software system to other insurance companies and agency automation vendors. They say it will ease electronic connections between insurance agents and carriers while making multiplatform agency software packages work together more smoothly. **Page 27.**

■ **On-site this week:** Computer power is essential to unravel the secrets of matter, and physicists at Fermi National Accelerator Laboratory — home of the world's most powerful particle accelerator — know it. So, when they are not making particles collide, they are building some of the world's most powerful computer systems. **Page 31.** When your fleet of 41 tractor-trailer drivers is logging thousands of miles each week delivering food to 7,000 client sites, any decrease in unnecessary miles is a godsend. International Jobbers Food Service Distributors, Inc. recently replaced its minicomputer fixed-routing software system with a more flexible personal computer package that plots the optimum delivery routes covering the least distance on easily traveled roads. **Page 69.** User consistency was a key requirement when Bay State Gas went shopping for new accounting systems. **Page 32.**

SYNCSORT.
WHERE BUSINESS TURNS FIRST FOR SORTING EFFICIENCY.

CEOs catching strategic IS bug

BY GARY H. ANTHES
CW STAFF

After years of skepticism and foot-dragging, chief executive officers are waking up to the strategic imperative of information systems. But that will generate a flood of demands during the 1990s that will find many IS organizations embarrassed and unprepared.

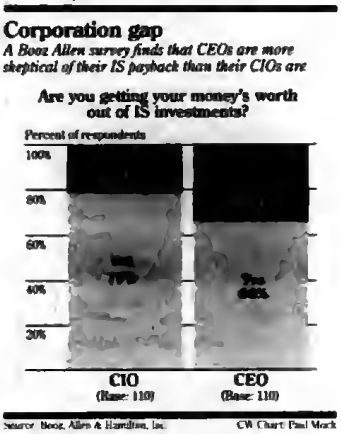
Those are among the conclusions of a soon-to-be published survey of CEOs and chief information officers conducted by the management consulting firm Booz, Allen & Hamilton, Inc.

Booz Allen asked CEOs to evaluate their IS chiefs' understanding of business issues and then asked the CIOs how they thought their bosses would rate them. "Based on the survey responses, we feel only about one-third of the CEOs and CIOs have the necessary understanding of each other's position, role and viewpoint to function together as a team," Booz Allen said.

The good news for IS is that CEO satisfaction with systems has risen dramatically in the three years since Booz Allen did a similar survey. Three-quarters of the CEOs said system performance — particularly in functionality and responsiveness — is better or much better than it was in 1987. Fifty-nine percent said their systems support their business strategy, "an astonishingly high percentage" compared with 1987, when 30% of senior executives felt that support was good, Booz Allen said.

Corporation gap

A Booz Allen survey finds that CEOs are more skeptical of their IS payback than their CIOs are



Source: Booz, Allen & Hamilton, Inc. CW Chart: Paul Mock

The firm also predicted a dramatic inversion of the traditional demand curve, in which CIOs advocate spending money on technology while CEOs resist. It painted a future picture in which top management will become much more influential in promoting systems development.

"As little as three years ago, there was still a wall between the CEO and CIO," said Raymond J. Lane, a Booz Allen senior vice-president and architect of the study. "Now, the senior executive is taking over and, if the CIO is prepared, he becomes part of the team. If he's not, he's replaced."

The survey suggested that CIOs will have to re-orient and broaden their perspective to take on business roles that they have traditionally avoided. "The chief executive is taking over thought leadership for systems. Why shouldn't the CIO take over thought leadership for re-engineering the business?" Lane said.

Some IS directors at large companies said they are already seeing changes in demand dynamics. "I'm starting to see a little more pull from top management," agreed Al Hyland, director of worldwide systems at Polaroid Corp. "In the past, it was mostly push."

The CIO position is changing, said Vincent Swoyer, a survey respondent and vice-president of corporate systems at Sara Lee Corp. "It's changing from a technology-oriented position to a business-driven one. We used to look for ways to apply technology; now we look at business problems and then seek ways to solve them."

Booz Allen interviewed 110 CEOs and 110 CIOs at Fortune 500 companies in banking, telecommunications, consumer and industrial products and other industries. Results of the half-hour- to hour-long telephone probes suggested that several factors will lead to an exponential rise in demand for IS, according to the draft report. Top management recognition of the value of information technology is at an all-time high as executives increasingly see cost, time and service benefits.

Booz Allen also found that while almost three-quarters of the CEOs surveyed said they believe the CIO function will still exist in the year 2000, almost half the CIOs think their jobs will have disappeared by then.

Of the CIOs who counted themselves an endangered species, 53% said the job will evolve into a chief technology officer position, 29% said it will be absorbed into the ranks of line managers who are becoming more technically literate and 18% said it will be split into various specialties.

Ironically, CIOs may not get the credit they deserve for leading CEOs to the IS well, Lane said.

"As CEOs take on more responsibility [for systems], the CIO could be a scapegoat. The CIO has done the education, but he probably won't get the credit," he said.

Amtrak hopes PC deal will stoke profit fires

BY ELISABETH HORWITT
CW STAFF

WASHINGTON, D.C. — A $14 million workstation contract that Amtrak signed last week with AT&T should pare down maintenance costs and boost reservation agents' productivity, giving the financially troubled national railroad an extra boost toward its "corporate goal of breaking even by the year 2000," according to Marvin Liebow, the project's director.

As prime contractor for the Arrow Terminal Replacement Project, AT&T will supply 2,200 Intel Corp. 80286-based workstations to replace Honeywell, Inc. dumb terminals used by ticketing and reservation agents at National Railroad Passenger Corp., otherwise known as Amtrak. AT&T won out over four other vendors, including IBM, on a request for proposals that Amtrak issued in spring 1989.

A major goal of the project is to improve the productivity of the agents, who handle 34 million information and ticket queries per year, said William Tucci, Amtrak's senior director of reservation sales.

Currently, agents' dealings with customers are hampered by the dumb terminals' inability to feed more than one transaction at a time into Amtrak's IBM 3090 host. For example, "You can be pulling out a passenger record [to make the reservation], and the guy says, 'By the way, what was that departure time?' " Liebow said. The agent must then back out of the booking process and call back the scheduling information, he said.

In contrast, AT&T's windows-based workstations will allow agents to maintain views into scheduling, pricing and booking transactions and hot-key back and forth as needed, Liebow said.

By enabling agents to respond to callers' questions faster, the system should reduce average call time, or at least keep calls from lengthening as scheduling and other information becomes more complex, Tucci said. Chopping off one second from the average call length would result in a $250,000-per-year cost reduction for Amtrak, he added. Agents spend an average of 160 to 170 seconds on each phone call, Liebow said.

In the area of maintenance, the new systems are expected to cost Amtrak $500,000 per year — compared with the "incredible" $2.4 million-per-year maintenance costs levied by the Honeywell equipment, Liebow said.

The contract calls for the terminals to be replaced with AT&T 6286/Entry Level WorkGroup Systems running MS-DOS and equipped with Digital Communications Associates, Inc.'s Irma 3 convertible micro-to-mainframe package and Irmacard.

One key feature of the AT&T system is its ability to support popular local-area networking environments such as Novell, Inc.'s Netware and Microsoft Corp.'s LAN Manager, Liebow said. Amtrak is starting to evaluate implementing LANs as a way for agents to keep nonvolatile reservation information, such as special promotions, on a local server, minimizing the need to access the host, Tucci said.

Amtrak is now performing an initial evaluation of AT&T's proposed system, with implementation to begin Aug. 15 and rollout completion slated for late next year, Liebow said.

Concurrently with the Arrow project, Amtrak is upgrading the reliability and speed of connections between ticketing agents and the host system in Philadelphia, Liebow said. Guaranteed diverse routing for backup lines will ensure better protection against network failures such as AT&T's fiber-optic backbone disaster of 1988, which took out the railroad's northeast communications for almost a day, Liebow said.

The network upgrade will also guarantee response time of under three seconds to users, Liebow said, by boosting line speeds to 4.8K bit/sec. or 9.6K bit/sec. at all sites. Right now, some sites are served by 1,200 bit/sec. lines.

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	IMS		✓
	VSAM		✓
	TOTAL		✓
	CA-IDMS		✓
	CA-DATACOM		✓
PORTABILITY Runs identically on...	MVS		✓
	MVS/XA	✓	✓
	MVS/ESA	✓	✓
	VSE		✓
	VM		✓
	PC-DOS		✓
	PC LAN		✓
STANDARDS	ANSI SQL	✓	✓
	FIPS	✓	✓
	SAA	✓	✓
	NAS		✓
DISTRIBUTED DATABASE	Remote Request	✓	✓
	Remote Update	✓	✓
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NEWS SHORTS

Pansophic backs off buy

Pansophic Systems, Inc. canceled a deal to buy Heuristics, Inc. last week. Instead, Pansophic said it would form a strategic alliance with Sacramento, Calif.-based Heuristics to market a new computer integrated manufacturing product. Pansophic, a $218 million software firm, makes PRMS, a manufacturing business system, and Heuristics makes Onspec, a control system for the plant floor. Pansophic, based in Lisle, Ill., paid $500,000 for 5% of Heuristics in March 1990, signing a letter of intent to buy the rest of the company. That money will serve as a prepayment for an OEM agreement between the two companies.

Hands across Pacific

In a move that could signal a lessening of trade tensions, five U.S. semiconductor manufacturers have announced that they will join with Japanese automotive giant Toyota Motor Corp. to develop a series of specialized automobile parts. Intel Corp., Motorola, Inc., National Semiconductor Corp., Texas Instruments, Inc. and National Rectifier Corp. have all agreed to develop circuits that will perform specialized applications involving suspensions, meters and audio systems.

IBM: Look at the birdie

IBM and Delphi Technology, Inc. inked a pact last week under which IBM will manufacture automated photo machines for Delphi, an Atlanta-based photo processing firm. The automated photo machine kiosks, which will be tagged with the brand name R Stevens Express, will be built around IBM's Personal System/2 personal computers and use multimedia technology, including digital video interactive. Consumers will use a touch screen to enter information into a specially designed photo processing envelope. The film will then be picked up and processed at a processing center and returned to the kiosk the following day. Delphi plans to install several hundred of the automated kiosks per year nationwide, according to Steve Bostic, president of Delphi.

Spin-off at McDonnell Douglas

It still has some 1,000 employees offering computer systems distribution, service and maintenance nationwide to the tune of approximately $100 million per year. It is still based in Santa Ana, Calif. Moreover, it is still headed by President and Chief Executive Officer Burt Novak. But as of last week, McDonnell Douglas Field Service Co. is no longer a division of McDonnell Douglas Corp. It is out on its own as Novadyne Computer Systems, Inc., the result of a Novak-led management buyout. One of the first acts of the newly private firm was to decline to detail the financial terms of the deal. However, the ocmpany did say it hopes to sign on new OEMs and resellers.

Bugs bite revenue flow

Comsat Video Enterprises announced that because of some flaws in its software programming for its hotel pay-per-view television systems, an unanticipated decline resulted in second-quarter revenue for the company's Video Entertainment segment. The problem, which Comsat said has since been fixed, will result in a larger than expected second-quarter loss for the Video Entertainment segment, although parent-company Comsat is expected to post earnings consistent with expectations, the company said.

NEC tops Hitachi

NEC Corp., which dominates the Japanese PC market with a 50% share, took the lead in the mainframe speed race last week, introducing a system that the company claimed operates at up to 500 million instructions per second in scientific calculations. Those figures would put NEC's six-processor ACOS System 3800 Model 60 ahead of Hitachi Ltd.'s M-880 mainframe, introduced a month ago. Unlike Hitachi and Fujitsu Ltd., NEC is not pursuing an IBM-compatible policy. Deliveries are slated for April 1991.

More news shorts on page 124

DEC to beat open network drum

BY ELISABETH HORWITT
CW STAFF

BOSTON — Digital Equipment Corp. is expected to punctuate the opening of Decworld '90 today by bringing out the first commercial pieces of its multivendor network management system and making good on a year-old promise to provide high-speed networking for its systems via the Fiber Distributed Data Interface (FDDI) standard.

Also expected today is the introduction of the VAX 4000, DEC's latest answer to IBM's Application System/400 (see story below).

DEC's emphasis on industry standards in its announcements today will "definitely bolster its open systems network initiative," said Steven Wendler, a program director at Stamford, Conn.-based research firm Gartner Group, Inc. The vendor also seeks to strengthen its "focus on enterprise-level networking," Wendler said, by enabling its systems to communicate with and manage a broader base of communications environments.

On the network management front, DEC is expected to announce delivery dates for the first commercially available components of Decmcc Director, the keystone of the vendor's Enterprise Management Architecture (EMA). These initial introductions — the first with actual shipment dates, analysts said — will include a graphics-based, X Window System-driven interface. This interface will provide users with access to network management functions and access modules that allow Director to manage systems that comply with both Open Systems Interconnect (OSI) and Simple Network Management Protocol specifications for managing Transmission Control Protocol/Internet Protocol (TCP/IP) networks.

DECWORLD '90

DEC is moving faster than anticipated on TCP/IP support "in reaction to the realization that TCP/IP will be there for a while before OSI" becomes widely implemented, said Frank Dzubeck, president of Washington, D.C.-based consulting firm Communications Network Architects, Inc. The vendor recently announced that it would support TCP/IP directly on its VAX systems, eliminating the need for users to implement separate gateways or boxes to do Decnet-to-TCP/IP translation, Dzubeck noted.

Several early supporters of DEC's EMA Partnership Program are expected to announce availability dates for products that will allow Decmcc Director to manage their equipment. T1 switch vendor Stratacom, Inc. confirmed that it would make an announcement.

A significant no-show today will be DEC's long-awaited announcement of support for IBM Token-Ring. DEC intended to announce a third-party bridge between the increasingly popular network and its own Decnet-Ethernet environment but backed down at the last minute because it is still negotiating with the third party, Dzubeck said.

Demand for Token-Ring support among DEC users could well be limited, however, according to Computer Intelligence. Out of 9,100 VAX sites surveyed last month by the La Jolla, Calif.-based research firm, only 5% said they had Token-Ring networks. In contrast, 83% of the surveyed sites said they had Ethernet, the network that traditionally carries Decnet, the firm said.

More than one user expressed interest in DEC's expected FDDI introduction, however. Spokesmen at G.D. Searle and Grinnell Mutual Reinsurance Co. both said that their companies' expected use of imaging on DEC equipment points to the need for FDDI's 100M bit/sec. transmission rates.

VAX 4000 served into IBM, HP court

BY MARYFRAN JOHNSON
CW STAFF

The hardware highlight at Decworld '90 today will be Digital Equipment Corp.'s VAX 4000, a high-performance, office-size system that analysts said is aimed at competitors IBM and Hewlett-Packard Co.

Replacing the Microvax 3900 at the top of that line, the VAX 4000 Model 300 — which is already shipping to customers — comes in four configurations ranging in price from $75,410 to $233,230, DEC officials confirmed last week.

The company is pitching the machine, which runs at roughly 8 million instructions per second, as a price-competitive, more powerful alternative to IBM's Application System/400 and HP's 3000 line.

With a chip set from the VAX 6000, the VAX 4000 could also pose competitive problems for its own siblings. It is equal in power to a VAX 6000 Model 410 at about half the price, with I/O throughput four times greater than the Microvax 3900.

However, company officials shrugged off that performance overlap, saying the VAX 6000 can expand to six processors within the same cabinet and can run a vector processor for complex math computations. The VAX 4000 can do neither.

Then again, a potential VAX 6000 sale is already on the ropes with Chicago Title and Trust Co., which is currently beta-testing several VAX 4000s as candidates for an all-DEC distributed processing network at 40 offices nationwide. The 4000s were chosen as a less expensive alternative to low-end 6000 models, said James Suprinski, director of information services.

The VAX 4000 can be configured as a VMS time-sharing system, a dual-host time-sharing system, a network server machine or a dual-host server. DEC is also making a point of dropping the "micro" from this VAX's name.

Two of the dual-host VAX 4000s arrived last week at Sara Lee Knit Products in Winston-Salem, N.C., where the Hanes men's underwear division will use them to run a new distribution center application from RGTI Systems Software in New York.

Chief Information Officer Tom Cash said the company had Microvax 3800s scheduled to arrive last month, "but we were getting a little queasy about the horsepower this application required, so the 4000 came out at an ideal time for us."

At Structural Dynamics Research Corp. in Milford, Ohio, a VAX 4000 is now in use as a server for a network of Vaxsta-tion 3100s and a time-sharing, batch-processing machine. "We have found it to be real general-purpose type of machine," said Craig Haught, vice-president of computer resources.

Office politics

DEC's VAX 4000-300 overlaps the Microvax and VAX 6000 families

System	VAX 4000-300
Entry price (32M-byte memory)	$127,000
Transactions per second	21.6
Active users	124
Estimated MIPS	8
Maximum memory	128M bytes
Maximum storage	28G bytes

CW Chart: Doreen Dahle

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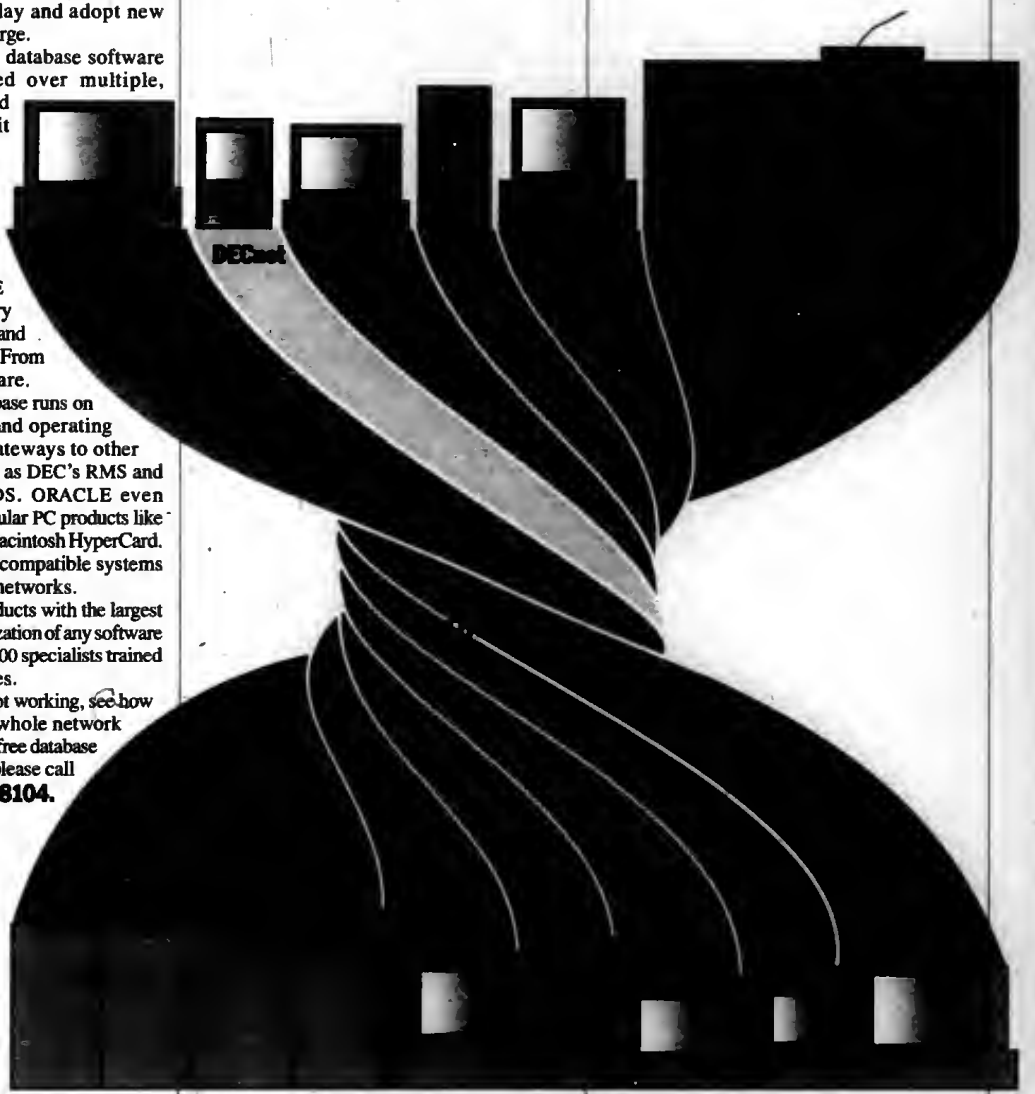

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Western Union finds a friend

AT&T answers distress call, agrees to purchase Business Services unit

BY ALAN J. RYAN
CW STAFF

UPPER SADDLE RIVER, N.J. — Western Union Corp. sought potential buyers and last week found one. AT&T entered into an agreement to purchase most of Western Union's Business Services unit for $180 million, allowing the flailing messaging company to exit the telecommunications arena.

The sale could give Western Union — currently struggling under a tremendous debt burden — some breathing room, according to Al Casazza, a credit analyst at Moody's Investors Service. Western Union would use proceeds of the sale to retire its senior debt.

For users of Western Union's Easylink electronic mail service, which would be sold to AT&T, the deal would mean Easylink would have strong financial backing, said Walter Ulrich, managing director of the Pacific/Southwest region of Arthur D. Little, Inc., and a consultant to the E-mail industry.

"Prospective customers for Easylink services can evaluate those products fully without worrying about the company's financial stability," Ulrich said.

Under the terms of the agreement, AT&T would purchase the assets to provide Western Union's Easylink E-mail service and its packet and Telex services. The agreement also includes the transfer of Business Services' employees and customer base to AT&T. Easylink, with more than 200,000 subscribers, is reportedly the largest public E-mail network in the country.

Carol Knauff, director of AT&T's intelligent network services organization, said that if the deal goes through, AT&T will merge its AT&T Mail electronic mail service with Easylink. The company will work with customers of both services to determine what features are most important to users, she said. The merged system would likely take 18 to 21 months to complete, she added.

For customers of both E-mail services, the switchover will be seamless, as the sales and service organizations of both units will remain in place. There will be no layoffs as a result of the merger, Knauff said.

Robert J. Amman, Western Union's president and chief executive officer, said the move will allow Western Union to concentrate on what it does best: financial services and paper-based messaging.

The agreement with AT&T does not include Western Union Priority Services, which has been part of the Business Services unit. That portion of the business would remain with Western Union and be operated as a separate business unit.

Ulrich said that AT&T's purchase of Business Services is a major endorsement for the E-mail and electronic data interchange markets. He said the deal would benefit subscribers of both AT&T Mail and Easylink.

The combined power of Easylink and AT&T Mail would position the service for market dominance, Ulrich said. For AT&T, the $180 million price is a bargain.

"The opportunity to exercise market leadership for that price is excellent," he said.

However, Moody's Casazza said, until Western Union's debt restructuring has been approved, there is still a danger that the firm could be forced into bankruptcy, negating the deal with AT&T.

The transaction is subject to regulatory approval and is conditional upon completion of a Western Union debt restructuring, which is expected to be completed by September, according to a company statement.

Friday's Western Union shareholders' meeting — postponed from mid-June — was adjourned as soon as it began. The move was made to allow the company more time to prepare and distribute new proxy materials regarding the Business Services sale.

Retailers

FROM PAGE 1

based EDI software systems, some of which cost as little as $3,000.

Besides, a small company that does 30% to 40% of its business with a single trading partner requires very little encouragement to do what such a customer asks, Norris and other analysts said.

Samuel Miller & Co. in Northbrook, Ill., received an EDI edict two weeks after a K Mart EDI seminar last month.

"We got a letter saying we had to be up by Aug. 1," data processing manager Gloria Rzepka said. Rzepka said that her department would not meet the deadline but that they were working toward it. The company has been a Wal-Mart EDI trading partner for more than two years, Rzepka said.

Neither Wal-Mart nor K Mart responded to calls last week asking for details about their EDI directives to suppliers.

Sears has also stepped up its efforts, sending out EDI information to some 1,300 of its 5,000 to 7,000 suppliers. About 400 are now on-line, with another 150 in the testing phase.

Sears has not been as aggressive as K Mart or Wal-Mart, although some customers reported that they were told Sears would eventually stop doing business with them if they did not implement EDI systems.

"We don't say we won't buy the goods," said Lance Dailey, director of EDI implementation at Sears.

However, Chris Talbot, company comptroller at John M. Frey Co., a Sears supplier, said, "They put quite a lot of pressure on us to meet their deadline" of May 1, 1990. Frey, a manufacturer's representative for copper goods in Moline, Ill., learned about the mandate in March and missed the deadline by several weeks but was not cut off as a Sears partner.

In addition to leaning on their trading partners, however, a number of the large chains are offering help — such as educational seminars and lists of EDI software companies — to smaller, less technically sophisticated companies. Sears goes a step further, providing or paying for training of trading-partner staff members to operate the EDI system.

Large retailers, sometimes described as EDI "hubs," use electronic connections with their suppliers to streamline routine business transactions, such as sending invoices and shipping notices. Because they use a standardized data structure, EDI forms also cut down on the clerical overhead required to process different forms from trading partners.

Analysts noted, however, that the ultimate benefit of EDI comes when it is joined with the company's internal information systems.

None of the retailers, however, seemed to back one software company, preferring to let their partners choose from an approved list.

With 1,810 EDI arrangements among its roughly 5,000 trading partners, Bentonville, Ark.-based Wal-Mart is already the largest EDI user and fastest growing retail user of the technology, according to EDI, Spread the Word, an industry information clearinghouse and publisher of the annual *EDI Yellow Pages International*. K Mart, meanwhile, claimed to have 1,000 EDI partners to date out of their approximately 6,000 suppliers.

Last December, Wal-Mart received the group's award for having the industry's fastest implementation rate, the largest retail program and the largest program using the ANSI X.12 standard protocol. In April, Wal-Mart again won the largest standard and largest retail program categories; Chrysler Corp. won the category of fastest implementor.

However, Walter Ulrich, Arthur D. Little, Inc.'s managing director in the Pacific/Southwest region, warned that strong-arm tactics, tried by other industries in the past, have generally backfired.

"It would be foolish to cut [a valued trading partner] off just because they won't do EDI," Ulrich said.

In the driver's seat

The Big Three auto makers, after nearly 20 years of EDI efforts, have begun to see success in the last two years.

Ford Motor Co. and Chrysler Corp. set deadlines for various sorts of critical applications, then invested millions of dollars into supplier seminars and full-time support staff to help implement the software applications suppliers need. The result? Suppliers have met deadlines.

The Big Three now work closely with software vendors and industry associations such as the Automotive Industry Action Group (AIAG). However, "huge problems remain," according to AIAG Project Team Coordinator Michael Gerus.

For instance, last month the AIAG announced a Big Three-supported implementation standard based on the ANSI X.12 format. But it may allow too many variants to help small firms such as Elgin, Ill.-based CR Industries, a maker of oil seals.

"Different plants within the same company define things differently, and we get 86 different versions of the same order," said Lawrence Egel, vice-president of MIS at CR. "We see that with all the manufacturers."

ELLIS BOOKER and MICHAEL FITZGERALD

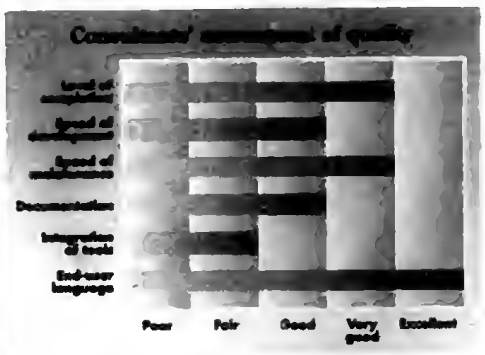
CORRECTION

Because of a transcription error, there were several serious errors in the product review of Software AG's computer-aided software engineering and fourth-generation language offerings [CW, June 25]. As a result, the criteria used to evaluate Software AG's products were consistently rated lower than the benchmark test actually demonstrated.

Below is a corrected version of the chart showing the consultant's assessment of quality of the products benchmarked.

Excerpts of the paragraphs that described the details of the benchmark should have read as follows: Speed of development was rated as "good" (not fair); speed of maintenance was rated as "very good" (not good); documentation was rated as "good" (not fair); and integration was rated as "fair" (not poor). Finally, the products benchmarked were rated as "very good" overall (not good) in the category of level of completion.

We regret our mistakes and any misconceptions that may have resulted about the products tested.



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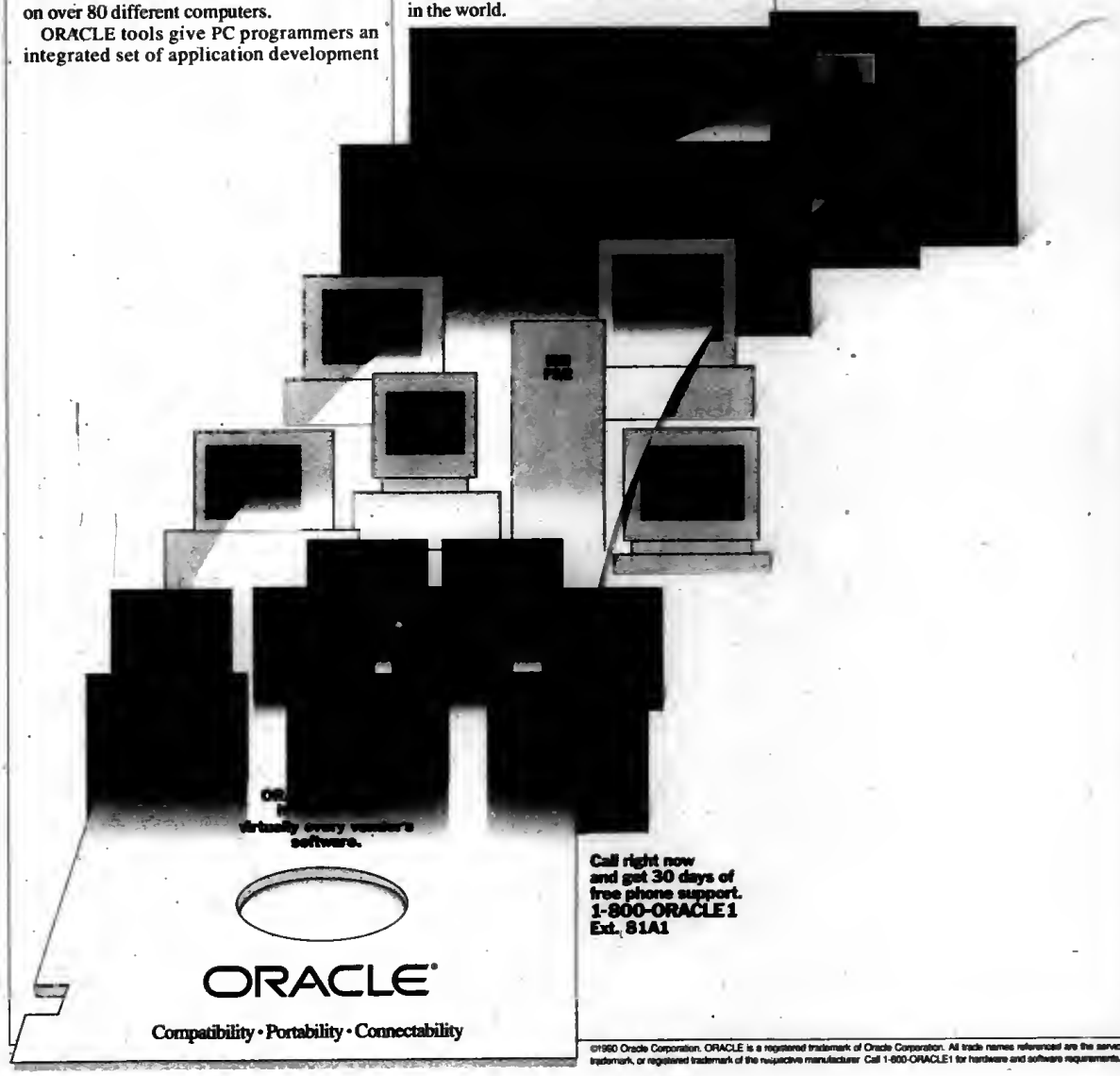

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Electronic price-fixing eyed in Fed investigation of airlines

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — There was a time when illegal price-fixing deals were made with a wink on the golf course or at trade association meetings. Now, the U.S. Department of Justice has embarked on an investigation to determine whether the airline industry has been using its online tariff database to accomplish the same thing electronically.

Investigators apparently are suspicious that airlines use the tariff clearinghouse — jointly owned by several major airlines — to communicate their pricing intentions and to discipline airlines that cut fares too much. "It's a new way of giving a wink and saying, 'Here's what I've done, and I want you to go along,' " said Benjamin Wright, an independent attorney in Dallas who specializes in electronic communications.

"When competitors set up a clearinghouse for pricing, production or marketing information, they need to consider the antitrust implications," he said. Federal antitrust law states that any agreement or conspiracy among competitors to peg or stabilize prices is illegal.

The Justice Department confirmed that it has opened an antitrust investigation of the way airlines use the industry database to monitor competitors' prices and make pricing changes [CW, July 2]. The department is collecting detailed information from the parties, but no charges have yet been filed.

Several airlines publicly denied any price collusion and said they set prices independently to reflect competitive pressures.

Marx says this case will set an example

Legal experts said the case will be closely watched by other industries with electronic networks. "Everybody ought to take a look at this case in the context of their own industry and make sure that safeguards, procedures, systems controls and training are in place" to prevent antitrust problems, said Peter Marx, of Wellesley, Mass.-based legal advisor to the information industry.

The airline industry's data clearinghouse is run by Airline Tariff Publishing Co. near Washington, D.C. Subscribers to the database include Official Airline Guides, Inc., vendors of airline reservation systems, travel agencies and corporate travel departments, according to Michael Ferrier, senior vice-president for computer services at the company.

Ian Ayers, an antitrust expert at Northwestern University, said that certain aspects of the clearinghouse make it conducive to "parallel pricing," whereby companies raise prices together in tacit agreement.

Ayers said the system allows carriers to "preannounce" fare increases that will not be effective for several weeks and allows them to send ancillary messages to other carriers, Ayers said. "They just don't want to be stuck out by themselves when they raise the price," he said.

For example, last September, American Airlines floated a proposed fare increase on the Airline Tariff database; within nine days, it was matched by other airlines. That incident is the subject of a separate investigation by the Justice Department.

Eye for an eye

Another pricing tactic was revealed in a June 28 investigative report by *The Wall Street Journal*. It said that major carriers sometimes insert fare changes and secret codes into the database in order to punish fare-cutting airlines.

For example, a major carrier may retaliate against a fare-cutting airline by slashing fares at the maverick's hub airport — a tactic known as "bombing" or "trashing." To drive the message home, the carrier may add a special letter code next to the fare, the *Journal* said.

The Airline Tariff is jointly owned by the industry's major carriers, including Northwest Airlines, American Airlines, United Airlines, USAir and Continental Airlines.

A spokesman said Airline Tariff is cooperating with the investigation but has no further comment.

Ayers said the Airline Tariff case will be a tough one for the Justice Department to prosecute, because it appears to involve tacit rather than explicit agreements to fix prices. Also, the concept of "parallel pricing" is controversial in antitrust circles, and courts have not unanimously agreed that it is illegal.

If the Justice Department does pursue the case, it is likely to seek civil injunctions barring the airlines from certain practices, such as preannouncements, that facilitate price fixing, Ayers said.

The notion that price agreements could be arranged via an electronic clearinghouse is stretching the traditional boundaries of antitrust law.

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CA	La Jolla	Aug 2c Aug 2
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		Jul 31l Aug 21f Aug 21
	Newport Beach	Jul 17f Jul 17
		Aug 16c Aug 16
	Riverside	Jul 12f Jul 12
	Sacramento	Jul 26f Jul 26
	San Diego	Jul 17f Jul 17
		Jul 19f July 19
	San Francisco	Jul 12c Jul 12
		Aug 9f Aug 9f
	Santa Clara	Jul 18 Jul 18f
		Aug 17c Aug 17f
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		Aug 7 Aug 21 Aug 21s
FL	Jacksonville	Jul 19f Jul 19
	Melbourne	Aug 16c Aug 16
	Miami	Aug 14 Aug 14l
	Tampa	Jul 13f Jul 13
GA	Atlanta	Jul 10f Jul 10
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ID	Boise	Jul 26
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Ex-DARPA director goes to bat for MCC

BY MITCH BETTS
CW STAFF

Craig I. Fields, former director of the Pentagon's advanced technology projects, was named president of Microelectronics and Computer Technology Corp. (MCC) last week and said he hopes to produce some technology "home runs" for the research consortium.

A well-regarded technocrat, Fields made headlines in April when he was transferred from his position as director of the Defense Advanced Research Projects Agency (DARPA) to a low-profile job [CW, April 30]. It is widely believed that the Bush administration ousted Fields because DARPA was straying into the field of "industrial policy." Fields declined to comment on that theory.

Grant Dove, the 62-year-old chairman and chief executive officer of MCC, said Fields will join the Austin, Texas-based consortium this week with the titles of president, chief technical officer and chief operating officer. Moreover, Fields, 43, is in line to take on the CEO role in 1991 as part of a leadership transition from Dove to Fields, an MCC spokesman said.

The hard-charging Fields has long been a supporter of cooperative research ventures such as Sematech and MCC. "I want MCC to have some home-run projects for the member companies to give them a competitive advantage" in the world technology market, he said in a telephone interview.

MCC, which has a research budget of more than $60 million, was formed as an industry consortium in 1982 and — like DARPA — focuses on advanced computer and software technology, including machine learning, microelectronics and high-definition systems.

"At MCC, I'm hoping to combine the development of advanced technology with the transfer of that technology to the member companies. Many organizations can do one or the other, not both. That [combination] is what I've been doing at DARPA for years," Fields said.

Fields brings to the MCC job a mixture of skills, including experience managing DARPA's $1.1 billion research program, technical expertise, salesmanship and an "inquisitive mind," according to Robert Costello, who was Fields' boss and ally during the Reagan administration.

Fields and Costello have argued that the government should support dual-use technologies — such as semiconductors and high-definition television — that could make both the military and commercial sectors more competitive.

U.S. Sen. Jeff Bingaman (D-N.M.) said he was disturbed that Fields "was not allowed to pursue his lifelong dream to direct DARPA" and that the government is losing a valuable employee. "Our government's loss will surely be a gain for the semiconductor and computer industries," he said.

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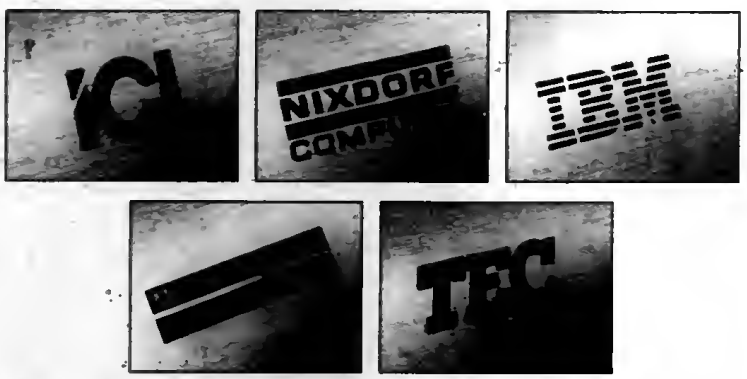

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Sequent airs updated Unix operating system

BY J. A. SAVAGE
CW STAFF

Changing its Unix operating system from a dual University of California at Berkeley and AT&T base, Sequent Computer Systems, Inc. last week announced a new operating system based solely on AT&T Unix System V.

The operating system will be more easily adapted to commercial, on-line transaction processing applications, according to the company. Sequent also announced a new computer intended for office use.

While most firms that offer parallel processing architectures are aiming at the scientific market, Sequent is trying to get a foothold in the commercial arena with its shared-memory systems. "Although only 5% of commercial applications are written to open standards, we think it will grow rapidly," said Stephen Verleye, product manager for Sequent.

The new operating system, Dynix/ptx, incorporates standards such as Posix and the Open Software Foundation's Motif. It also adds functions such as the ability to use X.24 and Transmission Control Protocol/Internet Protocol networking protocols on a parallel computer.

Sequent will offer a "variety of hand-holding programs" for users who wish to migrate, according to Verleye, ranging from tools to dedicated personnel. If users have applications on major databases, they can port to the new system "in a matter of hours," he said. But if applications are close to the old operating system, users will have to change source code to migrate.

The new computer, the S16, fits between Sequent's low-end single-processor computer and its large computers, which range from six to 30 Intel Corp. 80386 processors. The S16 is geared toward an office environment with two to six processors and starts at $50,000.

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FCC plan to slacken AT&T's chains draws fire

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — Thousands of pages of comments from dozens of companies and trade associations poured into the Federal Communications Commission last week in what some have called the most important FCC proceeding in a decade.

At issue is a 4-month-old FCC proposal to speed the pace of deregulating AT&T's long-distance voice and data services. In March, the commission said it had "tentatively concluded" that competition in the long-distance marketplace — especially for services to large businesses — had grown robust enough to justify loosening the bonds that have constrained AT&T since the breakup of the Bell System six years ago [CW, March 12].

In its comments filed last week, AT&T hailed the FCC's March proposal, saying the long-distance marketplace is "vigorously competitive" and that numerous government regulations "hobble" the telecommunications firm, thereby stifling competition and depriving customers of the price and services benefits of a free market.

Not surprisingly, MCI Communications Corp., U.S. Sprint Communications Co. and other long-distance carriers did not see it that way. Speaking informally for that group, James M. Smith, president of the Competitive Telecommunications Association, said, "We're united in the belief that . . . AT&T deregulation is extremely premature and completely unwarranted." At a press conference, Smith and others argued that AT&T still enjoys unique competitive advantages, including lower costs for access to local telephone networks and enormous operational economies of scale left over from predivestiture days. An unregulated AT&T would drive many existing competitors out of business, Smith asserted.

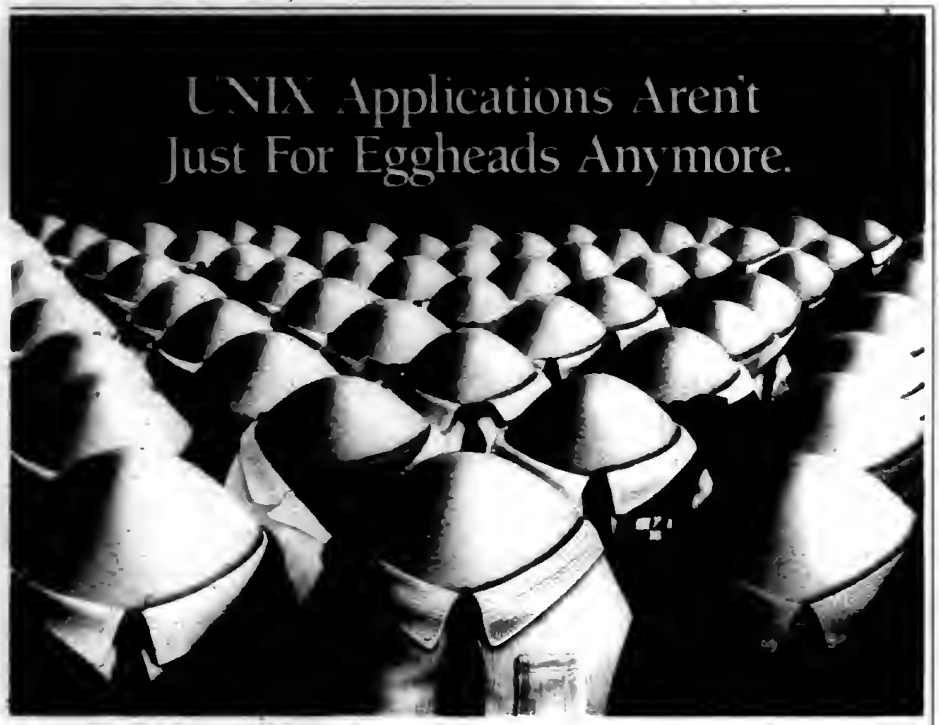
The competitors challenged the FCC's contention that AT&T cannot easily raise prices because MCI, Sprint and others have enough excess network capacity to accommodate a flood of customers fleeing AT&T. Sprint called the excess-capacity argument a myth, saying it would take Sprint years and billions of dollars to substantially boost the capacity of its fiber-optic system.

> "WE'RE UNITED in the belief that . . . AT&T deregulation is extremely premature and completely unwarranted."
>
> JAMES M. SMITH
> COMPETITIVE
> TELECOMMUNICATIONS
> ASSOCIATION

Comments filed on behalf of telecommunications users cautiously supported the FCC's conclusion that competition has increased greatly in the market for many services to large businesses. However, some argued that in some areas — such as 800 services — AT&T still enjoys an unfair advantage that should be offset by regulatory controls.

The FCC proposal calls for the elimination of price ceilings and price floors for such services to large businesses as Software Defined Networks, WATS lines and Megacom. The FCC would also move to substantially deregulate Tariff 12 services, Accunet packet-switched services and Skynet KU.

After consideration of the public comments, the FCC will complete the proceeding and issue a final rule on AT&T deregulation. Sources said that is unlikely to occur before the first quarter of 1991.



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IBM hits the electronic books

WHITE PLAINS, N.Y. — Hot in pursuit of the paperless office, IBM unveiled its Bookmanager family of software products last week, designed to allow users to read electronic versions of a book or manual at an IBM Personal Computer or Personal System/2.

Bookmanager Read/DOS 1.2 and Bookmanager Read/2 1.2 enable users to read soft copy in the DOS and OS/2 operating environments, respectively, while Bookmanager Build/VM 1.2 and Bookmanager Read/VM 1.2 allow users of host-based systems to create on-line books and read them on DOS, OS/2 and VM platforms.

The products will allow users to scroll through a soft-copy book or manual at their desktop or go directly to selected sections by using a single-search operation for words or phrases, according to the vendor.

Bookmanager Read/2 1.2 costs $185 and will be available this month. Bookmanager Read/DOS 1.2, Build/VM 1.2 and Read/VM 1.2 are scheduled for release in September and will be priced at $185 on the DOS platform and from $7,540 in the mainframe environment.

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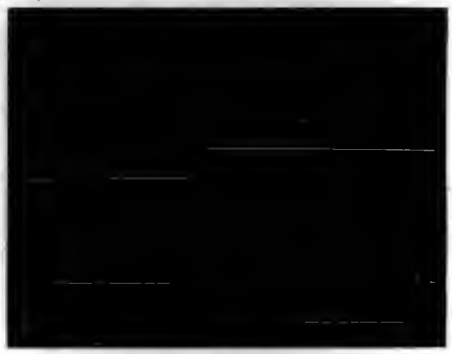

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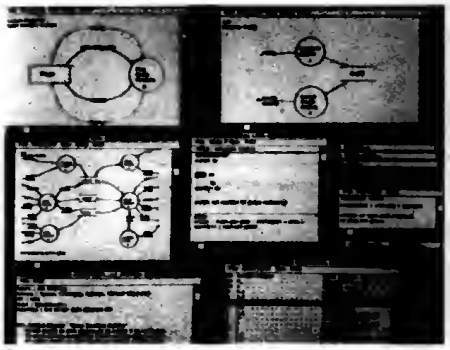

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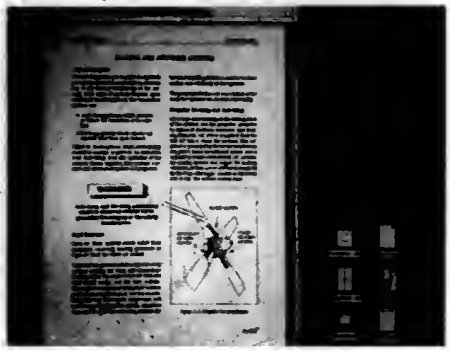

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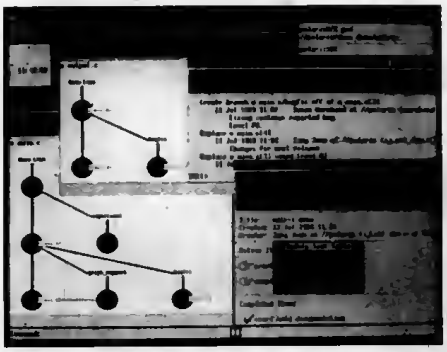

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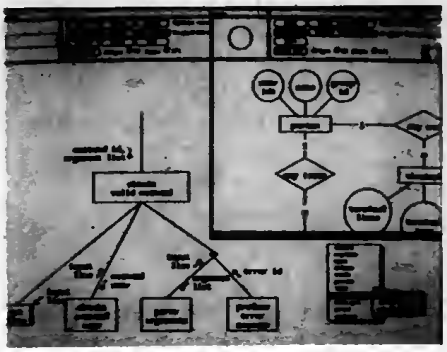

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HP RISC systems to diagnose own ills

BY JEAN S. BOZMAN
CW STAFF

MOUNTAIN VIEW, Calif. — Phone home.

Thousands of Hewlett-Packard Co.'s computers will be doing just that starting this month, when HP ships a new preventive-maintenance package to users of HP 3000 reduced instruction set computers running MPE/XL. A future release will be written for HP 3000s running the Unix operating system, said Roger Costa, general manager of HP's product support division.

The new HP Predictive Support XL package will be shipped on a tape, free of charge, to all HP 3000 MPE/XL users who have a maintenance contract. The software is an extension of a 4-year-old package that was written for older MPE machines.

Predictive Support is a rules-based system that analyzes patterns in logged-error reports relating components such as the CPU and attached peripherals. If failures are detected, the system dials one of HP's 32 support centers worldwide through a dedicated 1,200 bit/sec. modem with the goal of intercepting problems before they get out of hand.

Beta-test site users of the package said it correctly identified slowly failing disk drives in time to safely take those drives off-line. "On three or four occasions, the software notified my [field] engineer that a disk was failing," said Rick Ellison, a senior information systems analyst at Mobil Oil Corp.'s manufacturing department in Fairfax, Va. "It also made a call to HP when we didn't properly configure a new drive."

The Predictive system, which the user runs as a job, can alert the HP 3000 system operator in case of trouble — or it can be set to automatically dial up the HP support center. "My advice would be to run it at night," said Samuel Webster, a technical engineer at the publishing firm of Warren, Gorham & Lamont, Inc. who has used the system since January. "That way, you get a report on your system when you come to work each morning." Webster's Boston-based HP shop used a custom error-detection system before installing Predictive Support.

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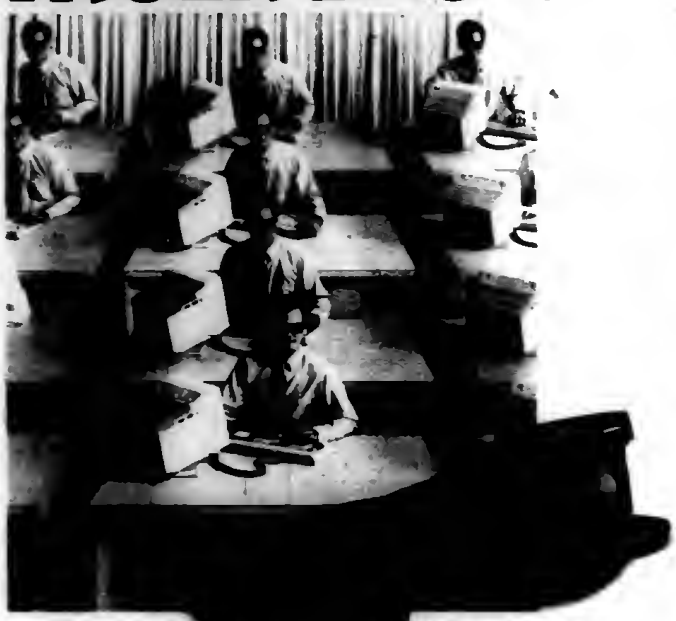

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Indictment issued in Wang theft

BY SALLY CUSACK
CW STAFF

CAMBRIDGE, Mass. — A New Hampshire man was indicted last week in an alleged $720,000 computer equipment theft from Wang Laboratories, Inc. in Lowell, Mass.

According to the Middlesex County District Attorney's Office, Gerard N. Dube, 30, of Derry, N.H., was indicted on 17 counts of larceny over $250 and one count of making false entries in corporate books between November 1988 and November 1989.

Dube is reported to have been employed as an engineer at Wang's Pawtucket Blvd. facility in Lowell, and the indictments charge that the defendant stole computer boards and components used to upgrade or repair computers. Also, Dube allegedly submitted a series of fraudulent requisitions for computer parts and equipment to obtain the items from Wang's inventory.

After completing the necessary paperwork, the items were allegedly moved from the facility and sold to computer firms located outside of Massachusetts, according to District Attorney Scott Harshbarger. Wang security initiated and Massachusetts State Police coordinated the six-month investigation, he said.

If Dube is convicted on all counts, he faces a maximum cumulative sentence of 95 years in state prison and/or a fine of $425,000. No arraignment date has been set.

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Electronic ink

■ Scratchpad computers that recognize handwriting are the latest rage in portable computing, but unless the user prints characters that are well-defined or in boxed areas, the computer will not get the message. Researchers at IBM said they have developed an experimental computer called the Paper-like Interface that is capable of recognizing natural, cursive writing. With the Paper-like Interface, a user writes with a stylus on a transparent digitizing tablet that is placed over a flat liquid-crystal display. The tablet has a layer that senses the position of the stylus on the tablet's surface and translates writing motion into "electronic ink" on the flat-panel display underneath.

Inner-earth watch

■ The National Science Foundation and 64 U.S. universities are constructing a global network of seismic stations that will generate detailed images of the earth's interior. Scientists said they expect that by studying the movement of massive convection currents deep within the earth, they will better understand earthquakes, continental drifting and the formation of mountain ranges. The cooperative venture said it plans to install more than 100 seismic measuring stations in dozens of locations around the globe, including the ocean bottom, by the year 2005.

Puny but powerful

■ Hitachi Ltd. announced last month that it has become the first company to develop a prototype 64-megabit memory chip. The experimental chip comprises 140 million devices crammed into an area about the same size as a human thumbnail. Hitachi researchers used electron beams to etch the circuits into the chip. The company did not announce when the chip will be ready for production; however, some experts predicted that the first chips will more than likely not be ready before 1995.

In search of a better interface

Whether with gloves or glances, new devices are making computers easier to talk to

BY MICHAEL ALEXANDER
CW STAFF

If an F-16 fighter pilot wearing a data glove can launch a missile inside an artificial environment by pointing, why couldn't that same technology be used to launch an application?

It is certainly possible; all it takes is for software designers to look beyond keyboards and mice, the traditional means of entering data into computers, toward some of the emerging input and output devices that are becoming widely available, according to some experts. It also requires designers to begin thinking in terms of interfaces based on interaction between human and machine as a two-way street and not solely as a one-way, human-to-computer interface, they said.

Manuel King

Thomas Hutchinson, a physicist in the biomedical engineering department at the University of Virginia in Charlottesville, has developed an eye-controlled computer, called ERICA, that has considerable potential in a wide variety of business applications (see story below). For example, eye-gaze technology could be used in word processing, allowing the user to select and move paragraphs by merely looking at them, along with a keystroke or two.

ERICA, shorthand for Eyegaze Response Interface Computer Aid, is now used mainly by paralyzed children and adults to communicate and overcome their disabilities in other ways.

Most software designed today has a user interface based on windows, icons, mice and pointing and assumes that there is one display and one active input device, typically a keyboard or mouse. Applications based on voice, data gloves and other input and output technologies are highly specialized applications and not readily available to the vast majority of computer users. The reason has less to do with the hardware technologies — all are widely available, often inexpensively — and more to do with a lack of software designed to work with them.

"You can't be thinking in highly specialized terms," Hutchinson said. "The fundamental thing is to get software designers to start thinking about interfaces in other ways. They think only about keyboards and mice, but they also have to think about eye gaze and voice and include the hooks into the software that is needed."

Expert systems and artificial intelligence will also be needed to make the human-to-machine interface more natural, he said: "To do the interface properly, the machine has to take into consideration that there is a slow device outside of it that needs a certain amount of response time."

Data gloves, voice, eye-tracking and other methods "can be married commercially, conveniently and appropriately to graphical user interface paradigms," said Aaron Marcus, principal at Aaron Marcus and Associates, a Berkeley, Calif., firm specializing in user interface design and evaluation.

Such input devices could possibly enhance computer communications by adding the visual and aural cues that we take for granted in face-to-face communications, according to Marcus.

"Right now, we have limited ability to add affect into our communication; that is why sideways faces [:-) for smile or ;-) for wink, for example] are sometimes used. We are suffering because we have so little ability to communicate affect in the user interface," Marcus said.

"The payoff is an interface that is more natural to our communications habits, easier to learn and more efficient," Marcus said.

The standard desktop is not a fitting metaphor for working with some new input technologies, and that has hindered the use of some devices in mainstream applications. "Some new paradigms are three-dimensional user interfaces, where things you want to select are all around you in space and not on a flat plane in front of you," Marcus said.

Looking them right in the eye

The Eyegaze Response Interface Computer Aid, or ERICA, developed by Thomas Hutchinson, a physicist in the biomedical engineering department at the University of Virginia in Charlottesville, would have seemed farfetched only a few years ago, but the technology that it is based on is relatively ordinary today. "We're doing this with [an IBM Personal Computer AT] and some additional hardware on the order of less than $3,000," he said.

Based on work originally done by researchers at IBM, Hutchinson was able to create several high-resolution squares set off against a low-resolution background on a computer display. Users operate optical switches that control various devices by focusing their eyes on these specially defined areas, each about 1.5 sq cm.

An infrared LED connected to a video camera mounted beneath a computer monitor beams a light into the user's eye. The light triggers an effect called "bright eye," caused by light reflecting off the retina at the back of the eye. The video camera records the light reflected off the retina, which moves as the user shifts his gaze, as well as light reflected off the cornea, which remains stationary. By measuring the distance between the two points of light, it is possible to determine the spot on the screen that the user is focusing on. The information is then relayed to an analog-to-digital expansion board in the PC, which in turn triggers the software to carry out the command indicated by the square.

ERICA is being used by people with severe spinal cord injuries to communicate, play games and overcome their other disabilities. However, Hutchinson said the technology has a myriad of uses. He is experimenting with an electronic polygraph based on measuring the dilation of a subject's pupils.

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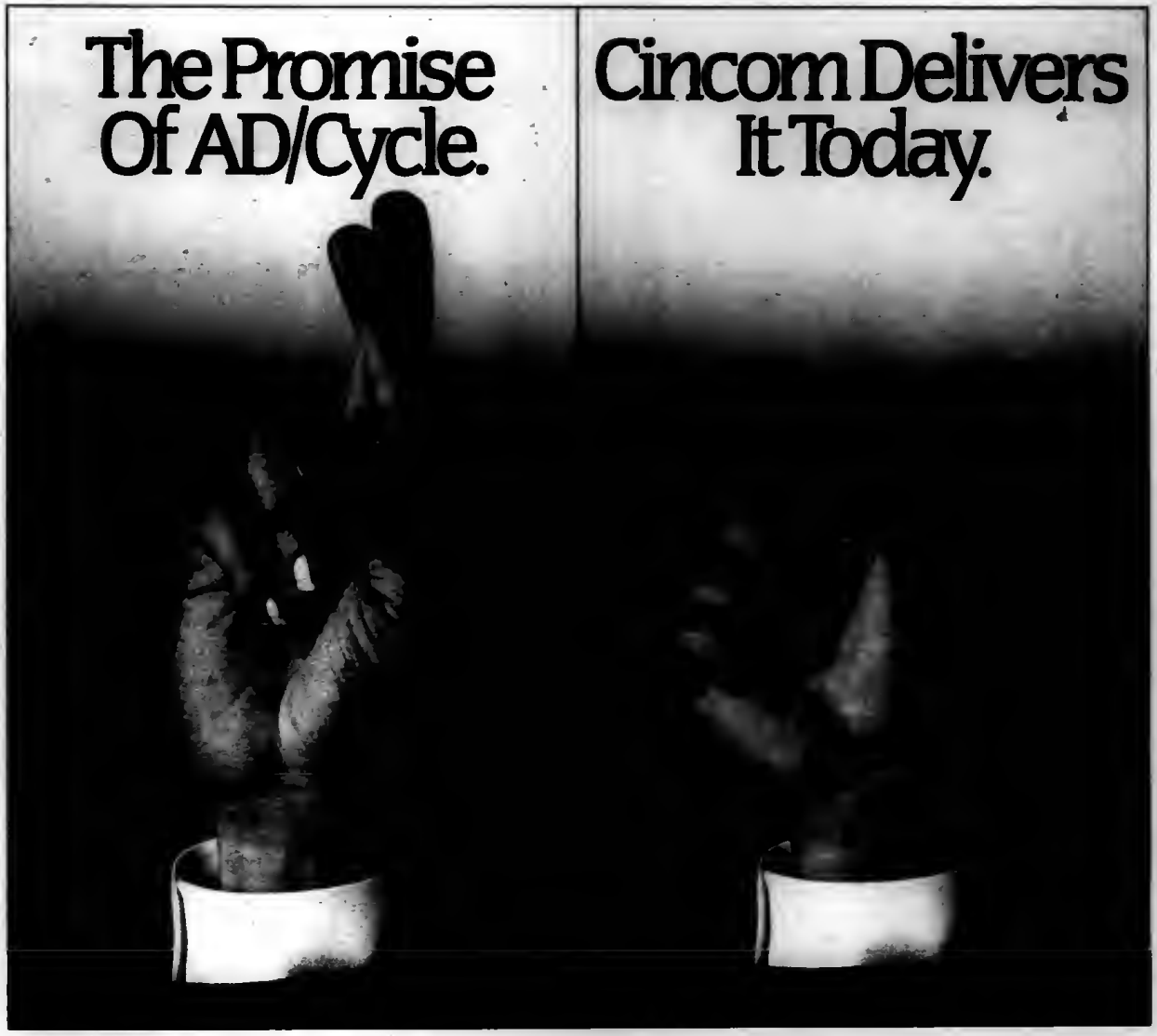

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EDITORIAL

Scat, copycat

THE INK WAS barely dry last week on the judge's ruling that upheld Lotus' copyright infringement suit against two small firms when Lotus drew a bead on a more serious player, archrival Borland.

If the decisions reached in one federal court jurisdiction are truly based on precedents set in others (and said decisions stand the test of appeal), you have to like Lotus' chances. Taking this logic and the particulars of the judge's decision a bit further, the look-and-feel suits of Apple against Microsoft/Hewlett-Packard and Ashton-Tate's suit against an alleged copycat all start to look more viable.

Apart from the immediate significance to the companies involved in these litigations and the impact — whatever it may be — on the customer, the more compelling issue now destined for another public airing is the effect of the *interpretation* of copyright law on innovation.

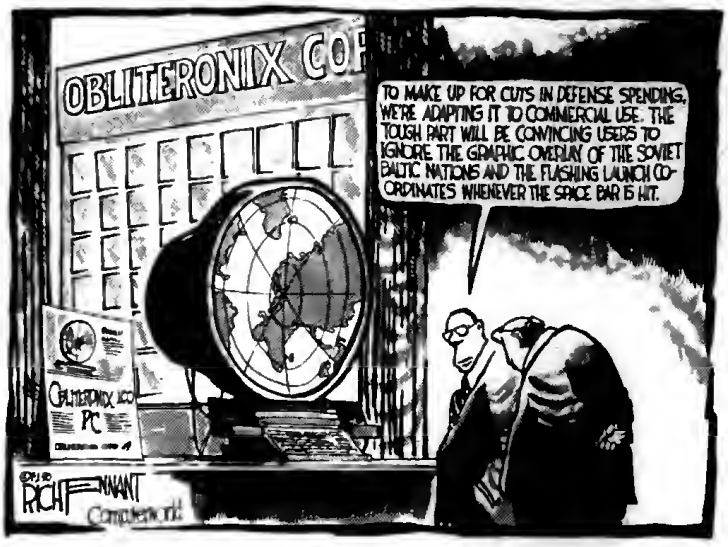
Don't be surprised to see "pro-innovation" forces build into quite a groundswell. There are scores of companies out there that have developed on the coattails of true innovators, walking a marginal line between infringement and legal activity. Now that line has more definition, at least as it relates to software, and that will be very unsettling to these companies.

Their arguments, however, will sound increasingly hollow. Historically, there have been — and today, there remain — compelling reasons for a fair body of copyright law, one that must also be flexible and in accord with the level of competition at any time.

Consider that the most rapidly expanding markets are outside the U.S., particularly the European market for personal computer software. And consider that there are virtually no non-U.S. companies that are major players in the PC software market. Is it too great a stretch to think that the "expanded" interpretation of software copyright law in the Lotus case had international competitive considerations in mind?

Consider also the very nature of PC software development today. While it is still possible for one or two minds to crank out the next revolutionary software package, it isn't bloody likely. Development is a very long and very costly process nowadays, and the risk-laden efforts that lead to a breakthrough product should certainly be protected. For those who think that this protection fosters consolidation and megaliths, there's a whole other body of federal antimonopoly law that ensures that market-making breakthroughs can be licensed for an appropriate price.

For the customer, prudent copyright enforcement guarantees a continuation of the stream of highly innovative products that the risk-takers have brought to market. In no way does this enforcement stifle innovation to anything approaching the extent we are about to hear from a lot of whiners.



LETTERS TO THE EDITOR

Hidden agenda

If, as is stated in "Users bypass war over distributed standards" [CW, May 14], the OSF does choose the Decorum proposal over ONC from Sun Microsystems, it will be another example of the OSF's hidden agenda to muddy rather than clarify the issues of standards and openness.

I also take exception to the article's implication that the OSF is *the* standards organization in the Unix world. I would have thought a more balanced (and accurate) article would have mentioned Unix International. We in the user community have not given OSF the right to set "official" standards. Instead, many of us are voting with our feet (and wallets) for Unix International — which includes Sun.

John Neubert
Manager
Academic Computing
Drew University
Madison, N.J.

Two Amigos

The sidebar to the article, "A moving story: Multimedia stakes its claim on the desktop" [CW, June 4] identifies the key players in multimedia in the future by looking at the computer, communications and entertainment industries, yet not once does it mention the current leader of desktop multimedia — Commodore.

The Commodore Amiga was designed from its start in 1985 to be a "multimedia" machine long before the word "multimedia" was coined by the press. The Amiga has already reached three of the six points mentioned in the main article: It is a core desktop technology; superior multimedia authoring tools are now available; and application software firms incorporate multimedia capabilities into their offerings. Third-party erasable magneto-optical drives are also available for the Amiga.

Strange how a company that has the products out now doesn't get mentioned, yet companies that have merely produced vapor are considered the "key players in multimedia in the future."

Charles E. Hill
Partner
Infotrak
Orlando, Fla.

I am beginning to believe that *Computerworld* is actively suppressing information about the Commodore Amiga. In your article "A moving story: Multimedia stakes its claim on the desktop" [CW, June 4], the capabilities of this powerful multimedia platform were completely ignored.

Overlooking the Amiga when discussing multimedia is like forgetting to mention Cray when discussing supercomputers. If you had done your homework, you would have found that the Amiga was the first personal computer to offer NTSC and PAL video, stereo audio output and multitasking as standard features.

The new Amiga 3000 includes these features plus the Arexx interprocess communications language and the Amigavision multimedia authoring tool. Using Amigavision with Arexx, a multimedia presentation can simultaneously control laser discs, CD-ROM and programs such as spreadsheets or hypertext databases.

Coverage of the Amiga in *Computerworld* seems to be limited to the "Letters to the Editor" column. Such selective reporting is a disservice to your readers.

Christopher R. Hertel
The Erwin Ross Group
Winnetka, Ill.

Just do it

Michael Cohn probably didn't know it when he wrote his terrific column, "Pumping PCs, or the IS route to fun and fitness" [CW, May 28], but someone has come up with a "car aerobics" program. The book is called *Autorobics*, subtitled "An Exercise Program for the Daily Commuter," by Larry Reynolds, John Casella and Charles Eldred.

The book is filled with a full range of isometric exercises to do in the car, tailored to all parts of the body and fully illustrated. Some of the exercises are Steering Wheel Flys, Seat Thigh Press and Floorboard Toe Raisers. There's a detailed anatomy chart showing which muscles are strengthened by each exercise.

Cohn was also on target with his suggestion to do exercises while waiting for a response from the mainframe. Verbatim Corp. put out a booklet in 1983 called "Tone Up at the Terminals" featuring fitness instructor Denise Austin, who now has her own exercise program on ESPN.

Gil E. Gordon
Editor
Telecommuting Review
Monmouth Junction, N.J.

Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor, Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax: (508) 875-8931; MCI Mail: COMPUTERWORLD.*

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Beat the product launch blues

RICHARD J. BLANCHARD

The pressure at U.S. high-technology firms to continually produce new products and get them to the marketplace quickly is tremendous and shows no sign of letting up.

New computer and communications products are being unveiled at a near frenetic pace at glitzy ceremonies resembling political campaign rallies.

Yet the degree of attention afforded product announcements is justified. Each time a company announces a new product line, it is, in effect, relaunching itself as a company in the eyes of industry analysts and observers.

However, all of the attention frequently masks an underlying disarray and lack of control by vendors in the process of product introduction.

At many, if not most, high-tech companies, there is no formal process in place to manage the introduction of new products. As a result, they tend to emerge helter-skelter into the marketplace, often the result of knee jerk, shoot-from-the-hip decisions influenced by individual and departmental agendas or in reaction to competitors.

The widespread lack of an integrated process to manage high-tech product introductions is symptomatic of a larger organizational problem in high tech: a communications gap among the company departments involved with new products from their conception to their final release.

This communication breakdown is costly, extracting a price in the form of missed production deadlines, inaccurate or untimely information and lackluster response to new products from the sales force, press and customers.

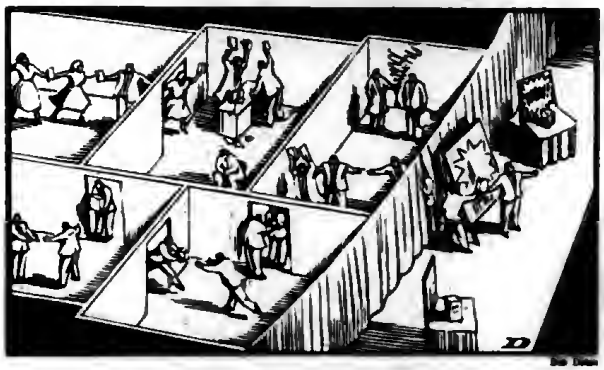
Customers also pay a price when their vendors can't show them what clear benefits the product offers. It becomes harder to plan future equipment requirements, budgets and purchases in such a climate. Customers feel unclear about whether their investment in the new product will be protected by a clear upgrade path.

Blanchard is president of Marketbound Associates, a Los Gatos, Calif., marketing firm.

Conflicts of interest

Much of the new product communications gap is rooted in long-standing interdepartmental conflicts over perceived roles in bringing new products to market.

A 1984 McKinsey & Co. survey of 107 research and development managers and 109 marketing managers at 167 high-tech companies found wide perceptual differences between the two groups concerning their respective roles in the new product development process. Thirty-five percent of the marketing managers felt that they worked closely with R&D in generating new product ideas, but only 20% of the R&D managers agreed with them.



Bob Dunn

Thirty-one percent of the marketing managers perceived that they were heavily involved in finding commercial applications for R&D's product ideas; only 16% of the R&D managers shared that view.

In my 16 years as a marketing professional involved with major computer and peripheral products manufacturers, I can confirm that this organizational schism exists. In fact, I submit that the gap is even wider than these figures indicate.

At all too many high-tech companies, products are simply tossed "over the transom" to the next department, moving from R&D to marketing to sales. Instead of a coordinated team effort, the product introduction process resembles a competitive sport, with one department essentially telling the next one in the product development cycle: "The ball's in your court."

Things haven't changed in the six years since the survey. Top management still holds the most influence over the product launch process. Given the current high level of marketing activity and global competition in the high-tech arena, the need for leadership to engender planning, coordination and teamwork in the product introduction process will be even greater in the 1990s.

Given the escalating pace of product introductions and competitive activity, the ability to manage the product introduction process may well spell the difference between the vendors that survive the 1990s and those that do not.

Meet your deadline

According to a McKinsey economic model, spending the extra money required to get a product introduced on time is more critical to the product's profitability than keeping it within budget.

The model postulates that a high-tech product introduced on time but 50% over budget would earn only slightly less projected profit over a five-year period. By comparison, a product that is introduced under budget but six months late would earn 33% less projected profit over the same five-year period.

Clearly, the time has come for a team-oriented process to manage product introductions. Individual departments working harder and faster and longer won't necessarily get better and more marketable products into the marketplace sooner.

Just as the cylinders of an internal combustion engine must fire in harmony to effectively power the drive train, departments within high-tech companies must work together toward the common goal of well-timed and correctly positioned product launches.

Escaping the middle management purge

MICHAEL COHN

Don't get me wrong, computers are a good business. But this is starting to get serious. The information systems boom booms no more. Growth is in the single digits. Companies are tightening their belts. Plants are closing. And people are being laid off.

I suppose most of us are safe. Good salespeople are safe. Technical people are safe. Even my brother-in-law in Hackensack, N.J., is safe, although he's been coding the same report program for a year and a half.

But this is no laughing matter for corporate America's favorite scapegoat: the middle manager. The middle manager is always the first to go.

So right away, I'd advise you to find out whether you are a middle manager. Follow these simple instructions: 1. Ask the guy that works for you if he is a lower manager. 2. Then ask your boss if he is an upper manager. 3. If they both say yes, then you are probably in trouble.

Don't panic! Do not go home and call your headhunter. Do not cut back on the kids' allowance. There are several ways out of this mess. You can still save your job!

- Get technical. Granted, this does sound kind of extreme. You may have to drastically alter your lifestyle. Work in horrible little cubicles. Be nice to users.

However, companies do not lay off technical people. Good technical people are hard to find. So get technical. Learn Cobol. Or learn some language that no one has heard of, such as Lobol. It might save your job. Plenty of technical people have been fooling folks for years.

- Become an upper manager. If you are not qualified to be technical, then try to become an upper manager as soon as possible. This might get a little tricky, because it generally takes somewhere between two and 40 years to get promoted into upper management.

Of course, maybe you don't have that long, especially if there's someone waiting in the corridor to move into your office.

- Become a lower manager. This is a lot easier. Just promote a lower manager, and don't backfill his position. Stick your name into his spot on the org chart, with the word "Acting" in parentheses. You'll be safe, at least for a couple of months.

The tough part is finding a lower manager who'a dumb enough to become a middle manager.

- Get a special assignment. No one has "layoffs" anymore. They have cost-effectiveness programs. They have redeployment strategies. If you catch wind of something like this, get involved in it right away. Volunteer for a committee. Do a study. It'a no coincidence that three moving vans show up the day they announce a "reorganization." Get on that reorganization task force while there'a still time.
- Act paranoid. Become noticeably convinced that layoffs are imminent. Let it get to you. Appear visibly nervous at all times, especially around your upper manager. Continually bring to his attention how a handful of about-to-be-laid-off-employees are most certainly planning some type of vengeful computer conspiracy. Be sure to point out that you've prudently made a list of all the important access codes, master files and data security routines so that you can help prevent this type of evil deed.

Keep this list locked in your desk at all times. Not only will everyone thank you for being so security-conscious, but, oddly enough, you suddenly will have remarkable job security.

- Use reverse psychology. Boldly announce that you should be the first to go. Offer to train your replacement. Unselfishly start documenting your responsibilities and procedures. Just make sure you come up with something that'a nine inches thick. Fill it with anything: flow charts, blank forms, bowling scores . . . it doesn't matter. Everyone will avoid the document like the plague, and no one will get near your job with a 10-foot pole.
- Stall. Fill out the paperwork for a pay advance. Or ask to change the secondary beneficiary on your group life insurance policy. Little bureaucratic crises like these catch personnel off guard. They will invariably take months to process your request or lose your file altogether. Either way, you bought yourself some time.
- What to do if it'a too late. You may have already had your exit interview. They could be cleaning out your desk right now. Thanks to those years of middle management, you may now find yourself unwanted, rejected and about as marketable as New Coke.

Don't despair; you are not alone. All over the country, groups of middle managers are banding together, forming support groups and trying to get on with their lives. Join one. They're in the Yellow Pages, under "management consultants."

Cohn is trying to be a computer salesman in Atlanta, Ga.

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SEE US AT DECWORLD '90

Policy for insurance standards

BY ELLIS BOOKER
CW STAFF

CHICAGO — The insurance industry recently stepped closer to a standard platform in its ongoing search for electronic connections among tens of thousands of independent agents and the thousands of insurance companies they represent.

A consortium composed of four insurance carriers and two leading insurance agency automation vendors announced the formation of a new company to market to insurance companies and agency automation vendors a personal computer-based software system. The system is designed to ease electronic connections between agents and carriers while making multiplatform agency software packages work together more smoothly.

"Today, when an insurance company wants to interface with an agent, it must contract with each agency system vendor, which must write a custom interface," said David Wroe, president and chief executive officer of Agency Management Services, Inc. (AMS). AMS, along with competitor Applied Systems, Inc. in University Park, Ill., are the two founding vendors behind Alliance for Productive Technology (APT), as the joint venture is known.

Promises to keep

The promise of a standard software interface for the country's 45,000 to 60,000 independent insurance agents — who typically represent three different insurers — has been made before. During the 1970s, an industry group began development of the Acord standard. But observers said acceptance of the standard has been slow and that most independent agents use dedicated terminals to access a single insurer's host computer.

APT officials said they would build on past interface efforts and that their software would use the Acord model as its core.

APT's software, which will come in MS-DOS and OS/2 versions, will be built around a relational database that will allow the insurance firm to add company-specific data to the industry model when the agent uploads raw data either in batch or through an on-line session. Databases located at the insurer and the independent agency will contain both the Acord standard and individual insurance company parameters; when changes are made to either the Acord standard or the company's own data form, they will be downloaded to the agents over Ivans, a 6-year-old insurance industry network carried on the IBM Information Network.

Slow acceptance

To date, acceptance of Ivans, like the Acord standard, has been slow, observers said.

"If you look five or 10 or more years down the road, it's inevitable there will be electronic data interchange for insurance claims processing — it just makes so much sense," said Laurence Chaite of the information technology planning practice at Arthur D. Little, Inc. in New York. "This is a positive step along the way," he added.

Chaite and other analysts said the choice of a personal computer platform for APT's interface product would put additional pressure on so-called "captive agents," who sell only one company's insurance product.

"[The interface] completes the puzzle," said Tom Eustace, chairman and chief executive officer of Applied Systems. He predicted productivity improvements made possible by the interface, which will reduce redundant inputting of information into different agent and carrier systems, could benefit consumers down the line in the form of lower insurance rates.

AMS and Applied Systems were joined in Chicago by representatives from some of the nation's largest property/casualty insurers: New Hampshire Insurance Co. in New York; Fireman's Fund Insurance Co. in Novato, Calif.; The Travelers Corp. in Harford, Conn.; EBS, Inc., a unit of The Travelers; and Chicago-based CNA Insurance Companies. CNA is the majority shareholder in AMS.

All four insurers will be on the executive committee that will manage the day-to-day business of the venture, and APT officials said they are seeking participation in the company by other agency vendors, insurance companies and user groups.

APT's marketing operation will be based in Chicago; research and development efforts will be conducted at the member vendors and insurance companies.

CASE on the fast track at large U.S. firms

BY MAURA J. HARRINGTON
CW STAFF

While computer-aided software engineering (CASE) has traditionally been used in highly technical development areas such as computer-aided manufacturing and computer-aided design, CASE technology is also beginning to be used in the commercial applications market, in areas such as project management, graphics-oriented analysis and design and documentation.

In a two-year, cross-industry study on CASE technology conducted by Boston-based Schubert Associates, Inc., more than 60% of the 100 large U.S. companies who responded said they plan to use CASE 30% more than they do now, during the next two years.

The study also showed that commercial use of CASE technology among these companies will grow significantly by 1992, with a likelihood that the largest firms in their market in the U.S. will use CASE tools in support of analysis and design and code generation in more than 70% of their development activities in those categories, according to Lynda Bodman, president of Schubert.

Other findings from the study showed that "CASE benefit objectives are in three dimensions: internal process improvements, project acceleration and end-results quality," according to those surveyed, which included information systems managers and corporate project leaders.

"The general feeling of those surveyed was that CASE tools are no longer associated with the glamour of the unknown; they are now associated as tools to solve the problems that they are built to address," Bodman said.

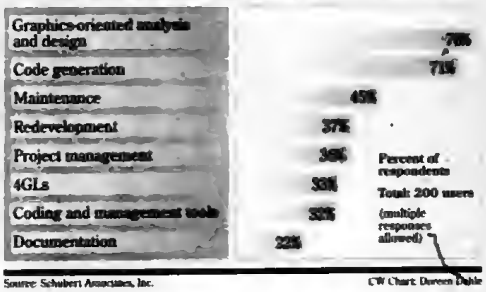
IBM's AD/Cycle strategy will also drive the use of CASE tools, according to Bodman.

"Eighty percent of our work in CASE today is on maintenance. . . . We lust for the time when IBM's AD/Cycle repository is here because we totally believe in the technology," said George DiNardo, executive vice-president in charge of information management systems research at Pittsburgh-based Mellon Bank NA. However, it may be some time before CASE technology becomes a household word.

Mark Mildorf, an employee at the U.S. Census Bureau in Suitland, Md., said while other offices within the Census Bureau have begun to explore the benefits of CASE technology, he is barely familiar with any CASE tools.

Wish list

About three-fourths of the users surveyed indicated that graphics-oriented analysis is the most important application supported by CASE tools today



Source: Schubert Associates, Inc. CW Chart: Doreen Dahle

On a steep learning curve with DB2? Or have you resorted to a 3GL to get the functionality needed with DB2?

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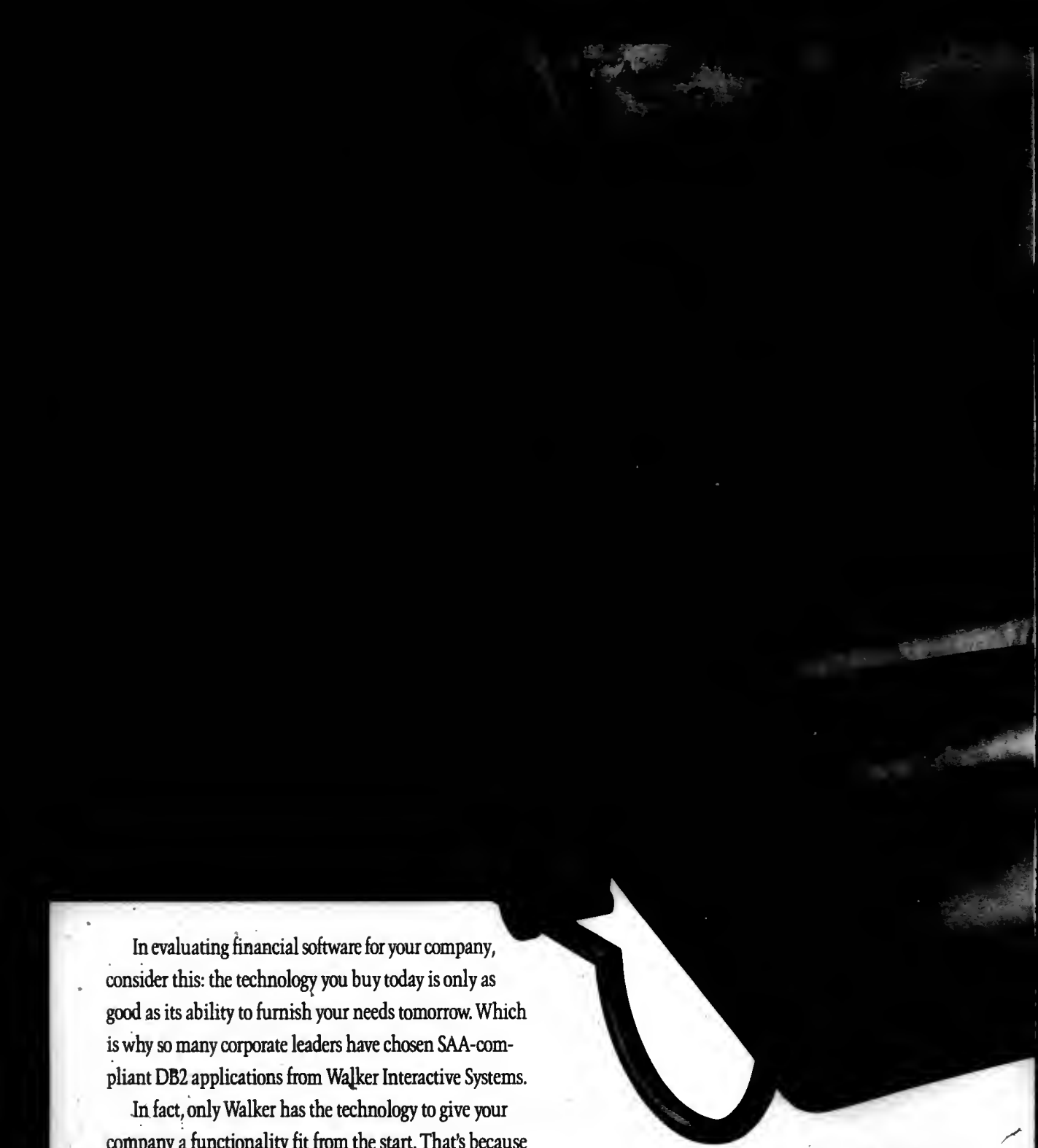
*PC WEEK, May 7, 1990. **Direct LocalTalk connections dependent on NetWare 386 NLM due Fall, 1990. Macintosh connection achieved today via standard bridges.



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The secret life of Fermi labs

Physics lab takes do-it-yourself approach to computers: It designs its own

ON SITE

BY ELLIS BOOKER
CW STAFF

BATAVIA, Ill. — Colliding subatomic particles together at unimaginable speeds and building computers do not seem, at first glance, to have much in common.

However, physicists at Fermi National Accelerator Laboratory, best known as the home of the world's most powerful particle accelerator, have led dual lives for the past few years, quietly designing some of the world's most powerful computer systems.

The reason for this work, the physicists said, is simple: Computer power is essential to unraveling the secrets of matter.

"Computing is the key technological barrier to be overcome in high-energy physics," said Thomas Nash, head of the lab's computing division.

In the past, Fermi's do-it-yourself approach to computing has been driven by several factors, including the combination of greater demands by the lab's 400 scientists for computing power and a tight budget, which puts an emphasis on cost efficiency.

However, the most important factor by far has been the sort of physics done at Fermi.

"We're fortunate that our computational problem lends itself to the trivial parallelism in a simple-minded farm," said Irwin Gaines, associate head of the computing division.

Parallel computing at Fermi comes in two types. First, there is a single experimental machine, soon to be completed, that calculates a complex theoretical equation using software and hardware developed at Fermi.

Second, the trivial parallel processing uses processor farms — collections of dozens of Fermi-made processor boards and more recently, commercial reduced instruction set computing (RISC) workstations — to churn through the vast amounts of data and individual calculations produced by its particle acceleration experiments.

Fermi's Nash: *Computing is key technical barrier in high-energy physics*

For about $1.5 million, Fermi is constructing a massively parallel supercomputer capable of a peak rate of five billion floating-point operations per second (GFLOPS).

This machine, now capable of 1 GFLOPS and dedicated to solving an arcane but important theoretical physics problem, is better than the handful of other specialized computers of its class, according to its creators.

The Fermi machine will have 256 processor boards, each with 20 million floating-point operations per second of capacity, that communicate through the system's intelligent communications backplanes. Fermi's system is capable of 128 simultaneous asynchronous conversations running at 20M byte/sec.

However, the key is Canopy, a fourth-generation software system developed at Fermi for grid-oriented calculations that has already been used on a number of different parallel platforms.

The duty of Fermi's six processor farms is to sift through real empirical data. Since 1986, the lab has strung together relatively simple collections of processors to examine the vast amounts of data produced by the Tevatron, the central piece of equipment at Fermi.

Crammed with electronics and powerful magnets kept at minus 460 degrees Fahrenheit, the Tevatron is a four-mile-long circular tunnel in which two beams of subatomic particles (protons and antiprotons) are guided on a steeplechase until they are aimed at one another. The result is up to 50,000 particle collisions per second, each collision causing a dense shower of new particles to come briefly into existence.

It is in this sea of short-lived particles, which are recorded by ultrafast sensors, that Fermi researchers hope to catch the sixth or "top" quark, a theoretically predicted but as-yet-unobserved particle.

Big Bang insight

Finding the top quark would prove the prevailing theory of subatomic physics known as the Standard Model and give scientists an insight into the nature of the very early universe, moments after the fiery Big Bang 15 billion years ago. The search has become the basis of a fierce competition among particle physics labs around the world.

One typical farm uses six different cabinets, each with 18 processors. A Digital Equipment Corp. Microvax doles out the data of a single "collision event" from a magnetic tape to each of the processors in the system.

The need to record possibly billions of events is one major reason Fermi is moving from its original homegrown processor boards to RISC-based systems.

For example, a 2-month-old farm featuring 25 Silicon Graphics, Inc. workstations offers a total of 300 million instructions per second of computing power.

On-Line's strategy gets a Facelift, good reviews

BY JOHANNA AMBROSIO
CW STAFF

On-Line Software International, Inc. is due to announce Facelift tomorrow, the latest step in the company's renewed corporate direction, which includes a slew of new products and a changed computer-aided software engineering (CASE) strategy.

Facelift is a package that allows the user interface on an application to be changed without having to rewrite the underlying code.

Jack Berdy, On-Line's chief executive officer, said, "Our corporate strategy is to provide not just products, which we do — that represents almost 80% of our business — but also to provide consulting and education services." He added, "All our software will become Systems Application Architecture-compliant."

Users already seem pretty satisfied with the company. Blue Cross/Blue Shield in Washington, D.C., uses On-Line's Verify testing package "extensively," said Donald Rifkin, data processing coordinator. The organization uses Verify to test a new billing and administrative system that has not yet been put into production.

"I'm very happy with the product and with support and service," Rifkin said.

His thoughts were echoed by Michele Otto, senior systems specialist at Time Warner, Inc. in Tampa, Fla., and by Naston Manley, database administrator at Occidental Petroleum Corp. in Los Angeles. Both said they were happy with their On-Line products and with technical support.

Time Warner uses Intertest to test its magazine fulfillment system and other on-line applications. Occidental uses Ramis for reporting off databases.

On the CASE

On-Line users will have other new products to try out within a year or so. The company is developing CASE tools — both mainframe and personal computer-based — with Tata Consultancy Services in Bombay, India.

These products represent a change of CASE strategy for On-Line, which had introduced a full life-cycle development tool set called Casepac in August 1987. Two years later, On-Line stopped selling Casepac.

"We felt our product, having a DB2 data dictionary as the basis of the product, would compete with IBM's Repository," according to Janet Windeknecht, product marketing manager for information engineering. "So we decided to take Casepac off the market and unbundle some of the components, which are some of the tools we'll be releasing."

All the On-Line CASE software will "definitely be compatible with Repository. Our tools will include a migration tool, which will automatically populate Repository with the models

Continued on page 36

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DEC faces new foes with VAXft

BY MARYFRAN JOHNSON
CW STAFF

As its first fault-tolerant VAX computers start elbowing their way into the marketplace, Digital Equipment Corp. is confronting some unfamiliar faces in its scuffle for new accounts.

"We are running into competitors we're not used to," said Craig Anderson, a marketing consultant at DEC. Most often, that means Stratus Computer, Inc., but DEC salespeople have also bumped into their counterparts from fault-tolerant systems makers Sequent Computer Systems, Inc. and Tandem Computers, Inc., with whom DEC is not used to competing.

Interest in the fault-tolerant VAX tends to be highly specific for certain applications, Anderson added, such as train or vehicle routing, shop floor control, process manufacturing, lotteries or commercial clinical laboratories.

One contest still under way involves a Medicare application for a large Northeastern state, which refused to let DEC bid on the contract earlier this year, Anderson said. Once the VAXft 3000 was introduced, DEC was able to go back and pitch its new computer against IBM and Tandem.

"This has put DEC in the competition where it wasn't before," agreed Wayne Kernochan, an analyst at The Yankee Group in Boston. He and other analysts still noted, however, that the VAXft 3000 will be a "slow sell" for DEC, particularly since its salespeople first try to sell high availability — not quite fault tolerance — with clustered VAXs.

"What we've seen from DEC so far is that they are looking both to the obvious traditional fault-tolerant markets and within their own installed bases in banking and securities," Kernochan said. "Tandem, Stratus and DEC all have a very strong proportion of sales to their installed base, but this is really a battle for the future rather than for the present."

There are also signs that all-VAX shops are not necessarily the only homes for the never-fail VAX.

New territory

That was certainly the case with CSX Technology in Jacksonville, Fla. The computer services arm of the international transportation company is about to launch LMS-III, a locomotive management system intended to handle railroad activities on 20,000 miles of track. The system will display the entire railroad network on Apple Computer, Inc. Macintosh workstations. The LMS-III database will reside on the VAXft 3000, acting as an SQL database server for the workstations.

"We initially looked at all sorts of combinations of platforms," said Art Masson, director of transportation systems development for CSX, which is one of IBM's large mainframe customers. "But where Tandem and Stratus fell down was in workstation connectivity. Neither of them had the client/server connectivity we needed."

The company is projecting savings of $16 million to $40 million through this new application, which is supposed to improve locomotive use by 2% to 5%, Masson said. "When you're running a railroad, you can't afford to miss assignments due to a computer breakdown. You literally stop moving trains on the railroad when that happens, and it's not something I want to get a call about at three in the morning," he said.

Another transportation application where DEC emerged with a new account was at Thrane and Thrane, a Danish company specializing in global transportation networks. The firm said it plans to have as many as 50 VAXft 3000s installed worldwide by 1995 to provide services on the International Marine Satellite Organization telex communications system.

The Thrane and Thrane system will enable information on ship movements and cargoes, telex and data messages to be transmitted via shipboard modem, satellite and shore-based VAXft 3000s in Singapore and Denmark.

In a more traditional vein for DEC, the VAXft 3000 was chosen as the core system for a new distributed shop-floor-control and data-collection system at McDonnell Douglas Electronic Systems Co. based in McLean, Va. "We are moving to an all-paperless environment where one system failure could shut the shop down," said Doug Flaherty, senior manager of system development at the electronics manufacturer.

Accounting system fuels success at Baystate Gas

ON SITE

BY SALLY CUSACK
CW STAFF

CANTON, Mass. — The accounting system used at Baystate Gas is not the latest in software chic, but lack of glitz does not tarnish its ability to handle financial operations at New England's largest independent natural gas distributor.

According to David N. Martin, Baystate's manager of accounting information systems, the general ledger software system is the "hub of our wheel."

To maintain the delicate balance of remaining profitable to investors while providing fair prices to customers, Baystate currently depends on a Unisys Corp. A10 Model H mainframe for all functions and has been using a G/L package from Lawson Associates since 1985. Prior to that, a McCormack & Dodge (now merged with Management Science America to form D&B Software) program handled all general ledger requirements for the company, which was then operating in a Burroughs (now Unisys) B-680 environment.

There are currently 300 IBM-compatible personal computers, including Intel Corp. 8088- and 80286-based machines, as well as some Intel 80386-based Unisys systems, attached to the mainframe over 9.6K bit/sec. leased lines for billing functions. Approximately 110 of those users access the G/L system, Martin said.

The accounting department really loved the M&D package, Martin recalled, but when M&D dropped Burroughs support in 1983, Baystate Gas was forced out into the market to look for another program.

Looking to establish user consistency, Martin set down a set of criteria prior to the purchase, including that Baystate adhere to a one-vendor approach for all accounting packages and that the software have a single, interactive database.

After looking at several packages that met those requirements, Baystate settled on the Lawson general ledger program,

Baystate's *Martin recommends one-vendor approach*

in part because it was available in a complete and deliverable format. MSA offered a similar tool at the time, Martin said, but it was not yet ready for delivery, and Baystate needed something immediately.

The Lawson product, a component of its Pinstripe Accounting System, offers a flexible account structure that permits multiple levels of entry and reporting within a company and allows the user to change relationships between levels as it becomes necessary.

One of the most dramatic improvements was seen in report run functions, Martin said. "Under the old system, it took one hour and 40 minutes. Suddenly, it dropped to 12 minutes. It was amazing."

Since the general ledger installation, Baystate has also committed to the Lawson payroll, benefits and personnel modules to maintain files on its 1,200 employees and has bought Lawson's purchase order and inventory-control programs as well.

The accounting IS group's single largest project these days is to integrate these packages under a single materials management system, slated to be finished in October. It will be using a Lawson computer-aided software engineering (CASE) tool, called Android, to that purpose.

"We weren't really in the market for a CASE tool; it just made sense. It's the direction of the future," Martin said. "It tied in well with our applications, and it is perfect for systems generation." He added that Android's screen painter function generates actual Cobol code and that the software functions as a 100% Cobol-generated database CASE tool. Martin runs Android on a Unisys 800-25 A, 386-based machine under Xenix.

Plans to relocate

Baystate plans to relocate its headquarters in November, an in-state move during which the Unisys A-10 Model H mainframe will go back to the leasing company, and a Unisys A-12 Model T will take its place. The new building will also accommodate Ethernet over twisted-pair cabling, Martin said, which will eliminate the need for the communications cards currently used to facilitate micro-to-mainframe connection.

In the foreseeable future, Martin predicted that the gas company will be trying its hand in several different areas, including bar-coding techniques for meter and materials inventory, using portable terminals in the field and explbring the possibilities of automatic meter readings via the telephone. Martin, who started with Baystate as a staff accountant 22 years ago, remembered the early days of excessive overtime to finish a particular job. "Now, we literally have the information at our fingertips," he said.

TI acknowledges plans to send 990 out to pasture

BY MICHAEL FITZGERALD
CW STAFF

An era has ended at Texas Instruments, Inc. TI recently acknowledged that as of the end of last month, it will stop making its Model 990 minicomputer, even though one user claimed that TI promised only two years ago that the system was not a "dead horse."

The proprietary-architecture 990 was the TI Computer Systems Division's best seller ever, racking up some 120,000 installations since it began production in 1971. There are currently 5,172 Model 990s installed worldwide, according to market research firm International Data Corp. in Framingham, Mass.

TI began phasing out the fading machine in 1985, after it released its 1000 Series Unix-based machines. The 990 is based on TI's proprietary 990 chip and runs a proprietary DX10/DNOS operating system.

A TI spokesperson said the company will continue to sell refurbished 990s and will guarantee system support until at least June 1995. However, many users have already migrated elsewhere. Few current users seemed concerned with the news. "We're phasing out the 990 and moving to a micro platform," shrugged J. D. McKnight, senior systems manager for Louisville, Ky.-based Humana, Inc., a hospital management firm with 12 of the 990s.

Another former user laughed when told of the news. "That's a nice trick," said Michael McCulloch, manager of application development at La Quinta Motor Inns, Inc. "TI assured us [in 1988] that [the 990] was not a dead product and that they intended to sell at least as many as they already had installed." La Quinta switched from the 990 to a personal computer-based network in late 1988.

At least one company could profit from the 990's demise. Austin, Texas-based Ten X Technology, Inc. licensed the DX10 operating system six years ago and has built a coprocessor board that allows users of IBM PCs and compatibles to run TI 990 programs.

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Ask taps into process manufacturing

BY MAURA J. HARRINGTON
CW STAFF

BOSTON — Ask Computer Systems, Inc. last week introduced a business information system software package designed for the complex process manufacturing market.

Process manufacturing, which deals with products that must be mixed or blended, is a virtually untapped niche marketing area for software vendors developing programs that address the manufacturing resource planning market in the U.S., according to Anthony Friscia, president of Advanced Manufacturing Research, a market research firm based in Cambridge, Mass., that specializes in the manufacturing industry.

Manman for Process, which stands for manufacturing management and runs on Digital Equipment Corp. VAX systems, is a plantwide information system for process manufacturers. It was co-developed with DEC.

Looking for benefits

Manman for Process was designed for those manufacturers looking to benefit from certain process manufacturing needs such as formula management, process instruction steps, "mixed mode" manufacturing (a combination of discrete and process manufacturing) and manufacturing batch orders, said Ask's product marketing manager, John Valencia.

"Every process industry has its own nuances, and each company has its own problems. One of our biggest problems was the planning system," said Manman user Michael Gallant, manager of the IS department at Unitrode Corp.'s integrated circuits manufacturing division in Merrimack, N.H.

Examples of process manufacturing users include those that manufacture food, pharmaceuticals, processed foods and paper, Friscia said.

He added that the software industry traditionally has developed products for the discrete manufacturing market, which is a repetitive method of manufacturing, usually without the variables that complicate process manufacturing.

Manman for Process includes seven different software programs, including manufacturing functionality, accounts payable, general ledger, lot tracking, a systems integration software package and a repetitive software program for high-volume manufacturing, according to Valencia. Prices range from $50,400 to $141,500 for the software.

On-Line

FROM PAGE 31

and data." The strategy, Windeknecht said, is "to add value to whatever IBM offers, not to compete with a full life-cycle offering."

On-Line has recently unveiled other types of products, including a VTAM version of Verify and support for IBM's new Version 3.1.1 of CICS throughout the On-Line CICS product line, which includes Intertest, Verify, DADS/Plus and UFO.

Scheduled to arrive later this year is Shareoption 5, which reportedly will allow users to access a VSAM file for batch processing.

The company is also working on a new generation of Ramis. Scheduled to be completed in three years, the new Ramis will allow users to access and manipulate data stored across all of IBM's SAA-supported platforms and will adapt IBM's Common User Access interface, according to On-Line. Ramis will also have an object-oriented architecture.

There are no current plans for the systems software company to develop packages for non-IBM platforms. "As you move toward SAA-compliant software, you obtain the portability between the different environments that IBM supports," Berdy said.

IBM Announces
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Applications packages

Cincom Systems, Inc. has announced a mainframe word/text processing system that was designed for users of Computer Associates International, Inc.'s IDMS/DC environment.

M/Text enables end users, programmers or business executives to create and edit business documents such as memos, letters and reports. Other features include a mail merge and personalization utility that enables data from a database to be combined with text in on-line or batch environments, the vendor said.

Pricing ranges from $27,000 to $50,000, depending on CPU size and operating system.

Cincom
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Cincinnati, Ohio 45211
(513) 662-2300

Britz Publishing, Inc. has announced a system designed to provide small and medium-size businesses with a way to track fixed assets on an IBM Application System/400.

The Britz Fixed Assets System enables users to track fixed assets that have been depreciated or expensed as well as assets that cannot be depreciated. Lists, labels and inventory sheets are provided.

The product is available with RPG source code for $199.

Britz Publishing
101 Canton Road
Madison, Miss. 39110
(800) 255-2028

Compudrug USA, Inc. has announced a release of its Metabolexpert System for Digital Equipment Corp. VAX/VMS platforms.

The VAX/VMS version provides real-time compound lookup abilities, a secure knowledge base with an unlimited number of rules and an unlimited amount of stored metabolic trees.

The product lists at $25,000 for a VAX system with one to three users. Each additional user pays $3,500.

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Information Builders, Inc. has announced the integration of an expert system with its Focus fourth-generation language.

Level 5 for Focus enables users to develop applications containing embedded knowledge. While remaining in a Focus session, users can perform consultative queries, exception reporting and intelligent validation procedures against any database or all file structures in a data center.

It is available for all versions of Focus for IBM VM and MVS and Digital Equipment Corp. VAX systems running VMS and costs $19,200 for the IBM and $2,800 for the VAX version.

Information Builders
1250 Broadway
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Cincinnati Bell Information Systems, Inc. has introduced a document processing system for the banking industry.

Docubanc supports statement rendering processes and facilitates comprehensive document and image management tasks. The IBM host-based tool enables users to specify layout, fonts, literals and data to be used in documents such as account and credit-card statements.

Retail pricing ranges from $100,000 to $200,000.

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plus we have experienced consultants ready to help you plan and implement this important new release.

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As part of our on-going commitment to superior support, this fall we will introduce OSI LINK. IBM customers who use the IBM Information Network will be able to access OSI LINK directly from their 3270 terminals for information on all our products and new releases, plus direct downloading of PTFs to their mainframes.

Quite a demonstration of software and support from a company that's committed to keeping its IBM mainframe users as productive as possible.

For more information, call 800-642-0177. In Canada, call 416-620-4844. In Europe, call 44-71-631-3696.

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a Epson DFX-8000 could print every word of this ad in 1 second.

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There is an elite group of high-volume printer users for whom speed is measured not in hundreds of characters per second, but in thousands. For those of you, the quick minds at Epson® have created the new DFX-8000. It is, quite simply, the fastest printer Epson has ever made.

It is also compelling proof that an inspired piece of engineering need not be accompanied by an inflated price tag.

At 1066 characters per second, Epson's fastest printer ever.

Through a highly innovative two-in-one print head design, the engineers at Epson were able to double the speed of the DFX-8000—at a cost significantly below that of the average line printer.

While few printers can match the sheer speed of the DFX-8000, even fewer can match the ease with which it handles. Productivity-enhancing conveniences include Epson's advanced Smart-Park™ paper handling, dual paper feeds and an optional automatic paper cutter, plus other useful features rarely found on line printers.

As with every Epson, compatibility and reliability are a foregone conclusion. The DFX-8000 will easily connect to your PCs, minis and mainframes, and will run day after day without the least bit of trouble.

The combination of speed, features and reliability offered by the DFX-8000 is enough to accelerate the pulse of the most demanding high-volume printer user.

That is why, when you finish reading, we encourage you to watch it print a few hundred pages, in person.

It will only take a few minutes of your time.

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NEW PRODUCTS — HARDWARE

Processors

Paracom, Inc. has announced Multicluster-2, a midrange transputer-based parallel processing system.

The device offers up to 32 transputer nodes with 60 million floating-point operations per second and 400 million instructions per second.

Multicluster-2 can be accessed by workstations such as IBM Personal Computer ATs and Personal System/2s, Apple Computer, Inc. Macintosh IIs and Sun Microsystems, Inc. Sun 3s and Sun 4s. It can also be integrated into Ethernet networks via the Transmission Control Protocol/Internet Protocol.

Pricing ranges from $29,900 to $93,700, depending on configuration.

Paracom
2300 N. Barrington Road
Hoffman Estates, Ill. 60195
(708) 293-9500

Data storage

Gescan International, Inc. has announced Release 4.0 of its Gescan full-text retrieval system.

Features include a search accelerator that enables users of Digital Equipment Corp. VAX or Microvax systems to perform full-text searches without building and maintaining a collection of indexes and an interface that provides users with the ability to handle combined text, image and graphic data in X windows or Decwindows environments.

Pricing ranges from $22,000 to $55,000, depending on type of VAX CPU. A stand-alone version, Gfile, costs between $75,000 and $125,000.

Gescan International
P.O. Box 12599
Research Triangle Park, N.C. 27709
(919) 460-3100

Bull H. N. Information Systems, Inc. has introduced the MSS8090, an extension to its MSS8080 Mass Storage Subsystem introduced last year.

Its enhanced architecture provides data transfer rates of 3M byte/sec. An entry-level configuration includes an MSU8092 Mass Storage Unit with 1.89G bytes of formatted storage capacity and two intelligent peripheral interface channels that can transmit data at a maximum speed of 10M byte/sec., the vendor said.

Pricing ranges from $139,900 for a unit with 1.9M bytes of formatted storage capacity to $397,400 for a subsystem that can store 15G bytes.

Bull
Technology Park
Billerica, Mass. 01821
(508) 294-6733

Storage Technology Corp. has added two products to its family of direct-access storage devices (DASD).

The two-director 8900-cached DASD control unit features cache sizes of 32M to 256M bytes.

The half-string 8380R provides users with from 5G to 15G bytes of storage and is field-upgradable to a full 8380R.

The 8900 with a dual port and 32M bytes of cache will be available in the third quarter for $140,000. The 8380R will be available in the second quarter for $142,750 to $196,125, depending on storage capacity.

Storage Technology
2270 S. 88th St.
Louisville, Colo. 80028
(303) 673-5151

I/O devices

Psitech, Inc. has introduced the VME/1200, a graphics card set designed for Motorola, Inc. VMEbus applications.

The product includes four pipelined processors, three Motorola 68030s running at 25 MHz with static memory and a 32-bit digital signal processor — all of which combine to provide 18 million instructions per second and 25 million floating-point operations per second. A first-in, first-out device decouples VME or VSB busses to maximize throughput, the vendor said.

A single unit costs $10,000, with an optional 3M bytes of display list memory offered for $2,000.

Psitech
18368 Bandilier Circle
Fountain Valley, Calif. 92708
(714) 964-7818

Mitsubishi Electronics America, Inc.'s Information Systems Division has announced five monitors that operate over both interlaced and noninterlaced frequencies.

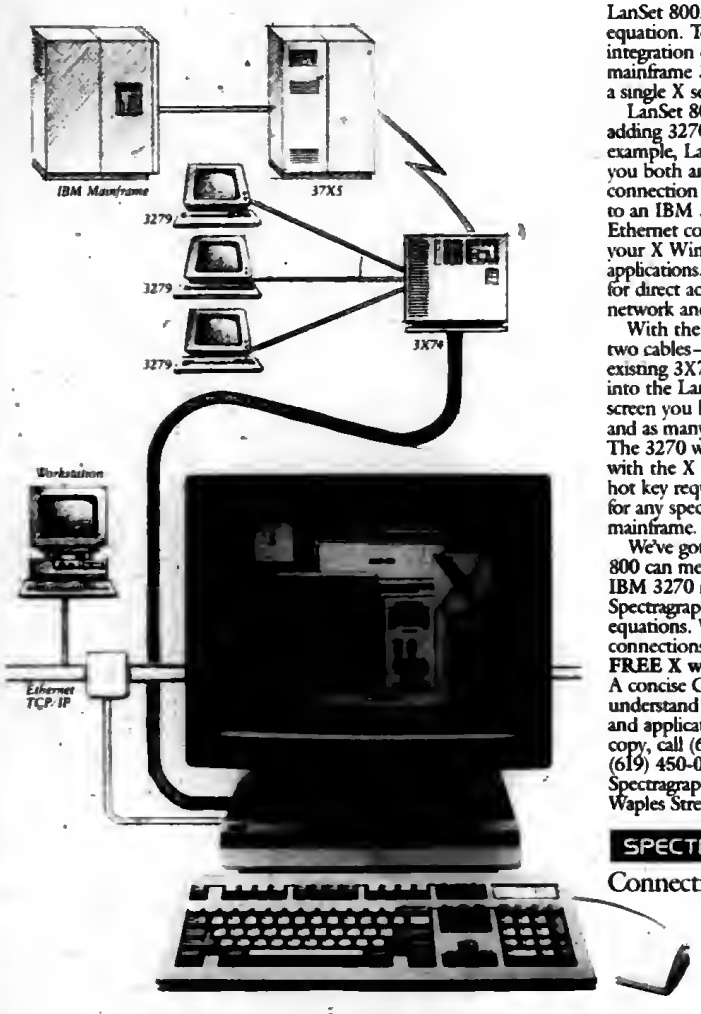
The Mitsubishi HC3905, FA3435 and HC3505SK models range in size from 14 in. to 26 in. and feature autoscanning between 15 kHz and 38 kHz (horizontal) and 50Hz to 87Hz (vertical). The products support analog or digital signal inputs without requiring any internal manual adjustments.

The monitors operate over frequencies such as IBM's Video Graphics Array, Enhanced Graphics Adapter or Apple Computer, Inc.'s Macintosh II.

Retail pricing for the products ranges from $1,280 to $11,300, depending on model.

Mitsubishi
991 Knox St.
Torrance, Calif. 90502
(213) 515-3993

X+3270=LanSet



LanSet 800. A new X Window equation. To give you full integration of X Windows and mainframe 3270 connectivity in a single X server.

LanSet 800 has several ways of adding 3270 functionality to X. For example, LanSet 800/3270dc gives you both an Ethernet TCP/IP connection and direct connection to an IBM 3X74 controller. Use the Ethernet connection for access to all your X Window and other UNIX applications. Use the IBM connection for direct access to your SNA network and SNA applications.

With the LanSet 800/3270dc, two cables – Ethernet and your existing 3X74 coax – plug directly into the LanSet X server. On the screen you have a 3270 window and as many X windows as you like. The 3270 window is fully integrated with the X environment, with no hot key required. There's no need for any special software on your mainframe.

We've got lots more ways LanSet 800 can meet your X Window and IBM 3270 needs. Check out all of Spectragraphics' X Window equations. We have the right connections for you.

FREE X windows Guide.
A concise Guide to help you understand X window technology and applications. For your FREE copy, call (619) 587-6969, FAX (619) 450-0218. Or write, X-Guide, Spectragraphics Corporation, 9707 Waples Street, San Diego, CA 92121.

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IDC WHITE PAPER

CATI: Computer-Assisted Testing and Implementation

If you don't think you need automated testing, just read the following article.

Every day, companies stretch the limits of their software programs without realizing that potential glitches could bring their operations to a halt. The examples in this white paper offer vivid testimony to this frightening reality.

For more than 17 years, we've been helping companies anticipate and correct these nightmares before they become front page news. Our products enable your company's DP and MIS personnel to simulate new programs, look at "x rays" of your system's inner workings and send out warnings before crashes can damage your company's reputation.

If you'd like to find out more about Compuware, call us at 1-800-521-9353. We'll do everything we can to keep you out of articles like the one you're about to read.

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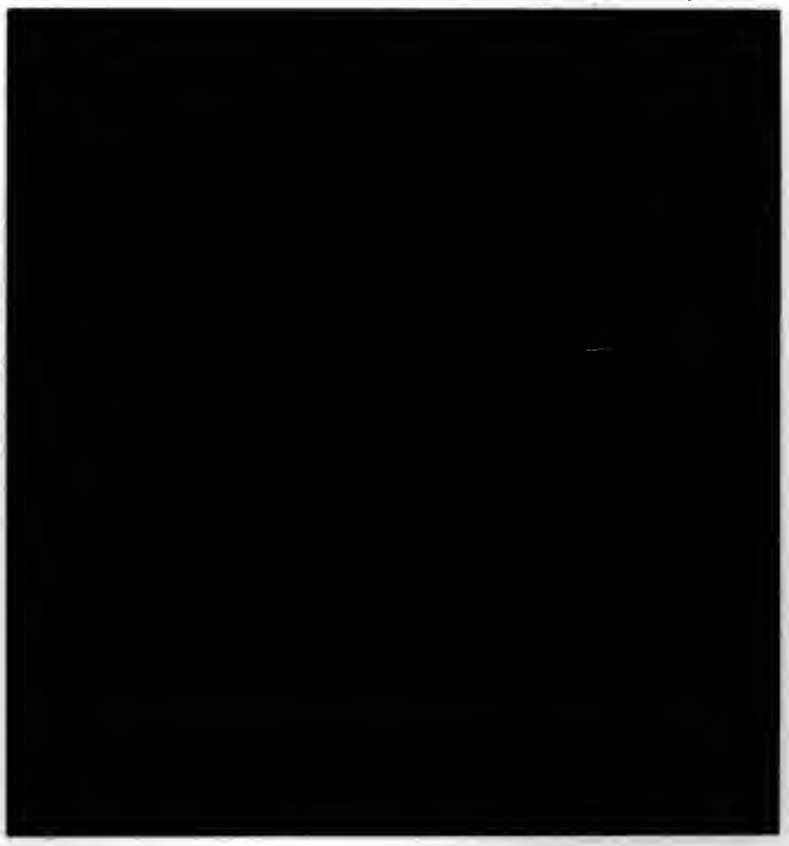
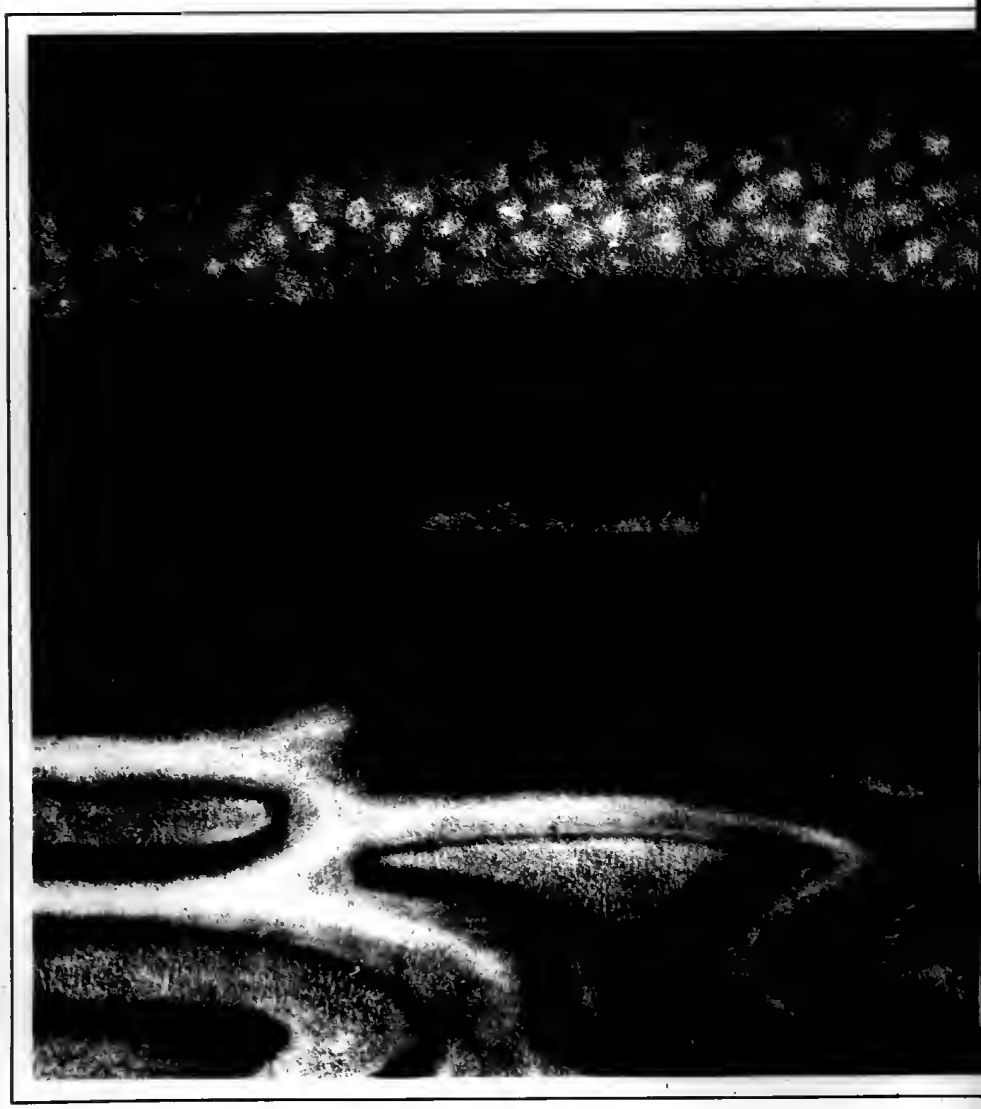
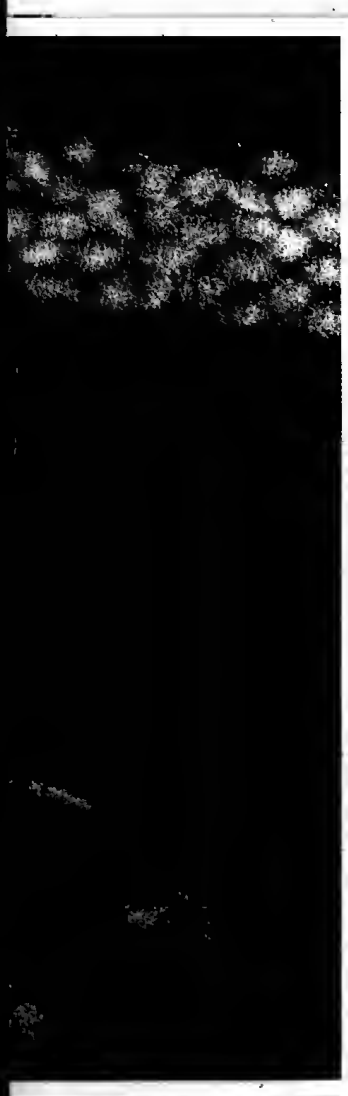
CATI: COMPUTER ASSISTED TESTING AND IMPLEMENTATION

AN IDC WHITE PAPER FOR INFORMATION SYSTEMS MANAGEMENT







CATI

THREE RECENT AND WELL-PUBLICIZED SYSTEMS FAILURES ARE LEADING CORPORATE MANAGEMENT TO RESTRUCTURE ITS APPLICATION DEVELOPMENT PRIORITIES. THESE EXECUTIVES ARE BEGINNING TO UNDERSTAND THAT BUILDING MISSION-CRITICAL APPLICATIONS. THAT WORK EFFECTIVELY AND PREDICTABLY IS AS IMPORTANT AS INCREASING PROGRAMMER PRODUCTIVITY. ■ AT&T BEGAN TO NOTICE A PROBLEM. A MAJOR PROBLEM. ITS LONG-DISTANCE NETWORK WAS OUT OF COMMISSION. HOWEVER, HEAVY TRAFFIC WASN'T THE CAUSE. THE CULPRIT WAS A MAJOR FAILURE OF ITS NEW NETWORK SOFTWARE. AT&T REQUIRED MORE THAN A DAY TO CORRECT THE PROBLEM. IT

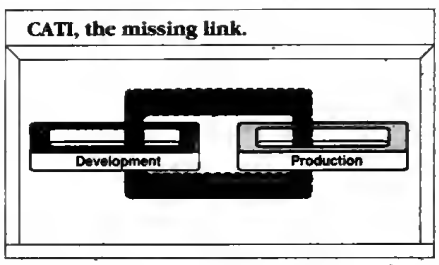
required longer than that to put its users at ease.

American Airlines recognized that it was not filling all of its available seats. A new software system indicated planes were full when substantial numbers of unsold seats remained. Revenue went out the window, and top management raised the roof.

The Internal Revenue Service was in a taxing situation. Its new digital, income-tax submission system wasn't working, and filers who expected immediate returns weren't getting them. The image of the IRS, already bad enough, got worse.

These highly publicized system failures and hundreds of less spectacular, less publicized examples highlight the need for more control in application development environments. Although its ability to rapidly generate code gives a predictable boost to application development, computer-aided software engineering (CASE) is not enough.

Increasingly, corporate managers are demanding computer-assisted testing and implementation (CATI) to ensure that mission-critical applications work as expected. CATI, an ally of CASE, is a set of coordinated and increasingly integrated tools used by application programmers to test and debug application software. Although less predictable in its productivity gains than CASE, CATI can be counted on to provide enhanced programs and fewer production problems in addition to detecting and correcting catastrophic system problems.



Computer-assisted testing and implementation can unite the application development and production environments

CATI TODAY

The AT&T, American Airlines and IRS examples graphically depict the importance of online applications to both current and future business success. The importance of, and growing interest in, CATI flow directly from the increasing dependence of modern corporations on online, networked applications. A company's complex application environment often includes several different database management systems, different file structures and different operating systems that may span multiple time zones and continents.

Online applications are the entry point into mission-critical business information used to make tactical and strategic decisions. The quality of these decisions necessarily reflects the application's strengths and weaknesses. This complex environment places greater demands on the testing, integration and implementation of systems prior to their migration to production.

Despite the best efforts to prevent it, these crucial online applications do have problems. They can put the temporary fate of an entire company in the hands of an unfortunate applications analyst who is charged with finding a resolution while under unbearable pressure. When placed in a situation such as this, why attempt to cope without the protection offered by CATI?

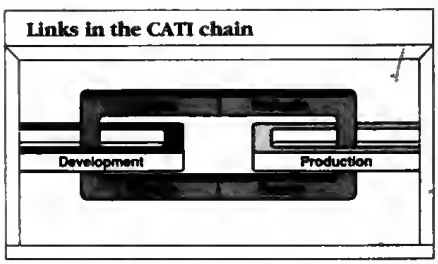
HOW MISSION-CRITICAL APPLICATIONS FAIL

Mission-critical applications may fail in three general ways. First, the application may suffer from endogenous, or internal, failure. The errors arise from internal inconsistencies that can be identified in isolation. Standard testing and debugging tools and procedures can identify these problems and facilitate correction.

Second, the application may suffer exogenous, or external, failure. Exogenous failures frequently result from interactions with concurrent applications in large network installations. They cannot be identified in isolation. Exogenous failures must be evaluated in the actual production environment or in a simulated environment that effectively mirrors the actual production environment.

Finally, complex applications may suffer from internal inconsistency. In simple terms, the information output from the system may not properly reflect information that has been entered. Complex application environments with thousands, perhaps millions, of potential interactions cannot be validated directly. Recent testing advances use statistical regression techniques to test for valid replicative results.

CASE has gotten a lot of attention in the wake of IBM's AD/Cycle announcement and the spate of related announcements from other vendors who want a piece of IBM's pie. Despite CASE's potential for developing new applications, however, it is often not the total answer to mission-critical application environments. IDC predicts AD/Cycle and its spin-off environments will lend themselves to CATI in the near future.



CATI is much stronger as an integrated entity than it is as a collection of its many individual tools

CATI – THE MISSING LINK BETWEEN CASE AND SUCCESSFUL BUSINESS RESULTS

Like CASE, CATI represents the natural evolution of well-known and widely used information systems testing and implementation tools into an integrated package. Those tools, described below, provide a wide range of capabilities.

Fault diagnostics, which rely on expert systems, or knowledge-based tools, intercept system error messages and other problems and immediately identify the nature of the problem. These tools essentially automate the time-consuming process of analyzing hexadecimal memory dumps and system error codes.

Network simulation tools do testing by replicating complex network environments. These tools help implementors who need to time-stamp processes in order to identify specific conditions that cause problems. They also help implementors stress test applications to determine the impact of imposing heavy loads on existing networks.

Some companies have an identity crisis.

We have an anti-crisis identity.

And what exactly is a software crisis? It's $50 million in lost ticket revenue to a major airline. It's a candy company coming up 11,000,000 chocolate eggs short at Easter. It's a telephone company losing half of their calls for nine very long hours.

These are actual software "glitches" that have had disastrous results. In terms of dollars *and* reputation.

That's why Compuware has devoted 17 years to developing products that detect errors and incompatibilities in IS systems. Our programs provide automated testing with clear, concise diagnostics that take you right to the source of any potential problem. Before it becomes a crisis.

Finding a solution *before* there's a problem. That's Compuware.

For more information, or additional copies of the IDC White Paper, call 1-800-521-9353.

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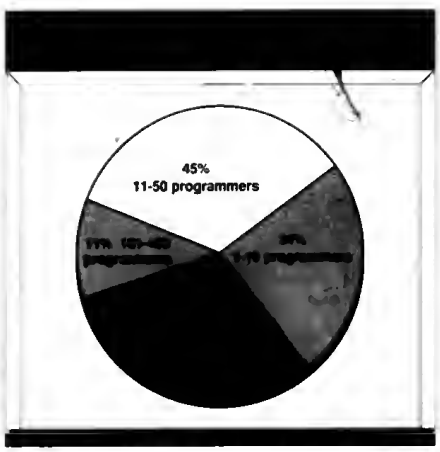
A typical network simulation tool can simulate a live, online CICS transaction processing environment. This allows programmers to do three things: test applications in environments with thousands of simulated transactions in progress, freeze specific snapshots of actual environments and modify simulated environments. Regression techniques permit evaluation of the accuracy and replicability of applications in complex environments.

Debugging tools facilitate immediate problem evaluation and resolution. They incorporate some sophisticated tools for isolating problems in complex network environments. On line editing tools permit rapid correction of application programs for both source code and data.

Without these CATI tools as a link, the benefits of CASE will not ultimately translate into bottom-line business benefits.



Almost 70% of IDC survey sites have between one and 50 programmers while the remaining 31% have between 51 and 400

THE IMPORTANCE OF INTEGRATED CATI

CASE and other application development tools measure their impact in terms of months and years. Development programmers can look months ahead to identify and resolve issues. In contrast, CATI measures effectiveness in minutes and hours. Once a problem is identified, management committees need not start counting the hundreds of thousands of dollars at risk, because CATI can identify, analyze and correct the problem swiftly.

Integrated CATI is beginning to establish the next plateau in testing and implementation. Integrated CATI offers two key facilities. First, it allows programmers to move easily between individual tools without logging on and off. This is provided – without extensive education and training – through common interfaces and instruction sets. As a result, solutions from one tool can be implemented within a second tool environment, seamlessly. This significantly reduces total programmer effort. Second, an integrated CATI environment permits construction of expert systems, which draw from common knowledge bases and information generated by multiple analysis tools.

The integrated CATI environment also allows IS and quality assurance people to capture the knowledge of programmers in a consistent and replicative manner. Integrated CATI, with diagnostics and simulation tools, enforces a testing and evaluation structure that remains with the corporation as programmers move to new levels, allowing maximum utilization of key people.

Although we may wish to believe otherwise, problem analysis and correction is an art, not a science. We rely on the expertise of individual technicians who have developed techniques for dealing with a finite number of specific problems. The technicians know the process, but IS typically neglects to capture that knowledge. Why? Many IS shops are so busy responding to, and solving, everyone else's requests and problems that they do not take time to step back and look at their own needs.

Specific problem types call forth common responses – the basic condition for developing an expert system. We are already seeing this methodology being developed in data centers with their "lights out" operations that allow the data centers to operate without humans on the premises. CATI capabilities such as fault diagnostics readily lend themselves to this type of intelligent environment. Why have a human responsible for recording and retaining solutions and responses to repeating problems? With CATI, this is accomplished faster – at machine speed – and more accurately. The integrated CATI environment employs reusable techniques and routines to analyze and correct errors. What could be simpler? In the volatile world of IS, CATI is a consistent buffer against the unpredictability of online systems.

Not too long ago, the major emphasis was on reserving processor resources with "desk checking," a labor-intensive, human-error-prone process. Today's approach is much different. In the quest to optimize the application development effort, there is still much concern for processor resources, but there is also concern for balancing human involvement with machine capabilities. The movement is toward minimizing human involvement, especially in repetitious tasks, while taking advantage of faster processors.

In operation, integrated CATI steps programmers and technicians through a specific sequence of diagnostic steps and possible fixes. In this environment, the problem of not incorporating the expertise of the IS staff is resolved, as CATI works best when synthesizing input from various sources.

Adding simulation capabilities to an integrated CATI environment moves testing and correction to a higher level. Simulation permits reconstruction of the environment in which the problem occurred. Problem resolution structures can require that revised applications pass tests in this simulated environment. This strict adherence to testing gives managers back the power to control their own computing fates.

CATI AS PART OF AN INTEGRATED APPLICATION DEVELOPMENT ENVIRONMENT

As integrated CATI moves upstream in the application development cycle, knowledge of specific problem areas and typical problem conditions will be built into the application development process. This procedure can happen in two ways.

First, new application development efforts can incorporate the knowledge contained in the integrated system. Development programs may be tested in simulated environments to ensure compatibility with existing application portfolios. IDC expects this will become increasingly seamless as application development tools become more sophisticated during the next 10 years.

Second, the knowledge can be incorporated directly into the application development engine. IDC believes this scenario, which is highly attractive to end users, will also occur within the next 10 years.

In either situation, integrated CATI represents a significant new plateau in the drive to automate software development. Leading-edge application development managers will increasingly use integrated CATI to amass application testing knowledge and remain at the forefront of application development practices. This leadership position will put them in a place to implement their systems with confidence, while possibly saving their companies millions of dollars.

CATI AND CORPORATE MANAGEMENT

IS enjoys a unique position in most organizations. Information systems increasingly represent mission-critical applications that help determine corporate viability. Few operating units with similar influence over corporate fortunes could consider moving directly from specification and development to operational status without a formal testing and evaluation process. The IS mystique, coupled with sometimes overwhelming application development backlogs, frequently leads IS to short cut their testing and evaluation procedures.

Despite knowledge of the aforementioned worst-case scenarios that struck AT&T, American Airlines and the IRS, corporate managers frequently overlook the comparative economics of CATI and CASE. CASE offers clear operational efficiencies, while CATI reduces the possibility of major loss and increases programmer productivity.

IDC's Software Research Group regularly monitors and forecasts IS application development plans. As part of its ongoing research, a group of 100 large IBM IS managers was recently surveyed. IDC discussed the users' application development environments and their plans and expectations for application development installations. Their responses, in combination with additional IDC user information, can be used to construct a typical IBM mainframe development installation.

Application development staffs at IDC survey sites range from 10 to 400 programmers, with an average of about 50. The average site programming budget is about $3 million. Using typical budget ratios, it is reasonable to estimate that the data processing budget at this average site will be in the $12 million range. This budget represents typical expenditures for a corporation with total revenue of approximately $500 million.

CASE users and vendors offer a broad range of estimates for sustainable productivity increases associated with CASE implementation. IDC estimates that new application development at large mainframe sites currently represents about 40% of total programmer effort. Total programmer expenditures for new application development would be about $1.2 million at our typical site. The site will probably find that new application development productivity increases by 25% after CASE implementation. CASE, therefore, offers a predictable benefit of approximately $300,000 per year for this shop. The site would also derive substantial indirect benefits from improved maintenance and program quality.

Assume that a specific mission-critical application is tied to 20% of corporate revenue. The mission-critical application at our typical site, therefore, would be integral to efforts generating approximately $100 million per year. In addition to boosting programmer productivity, CATI can help protect that figure from several potential losses.

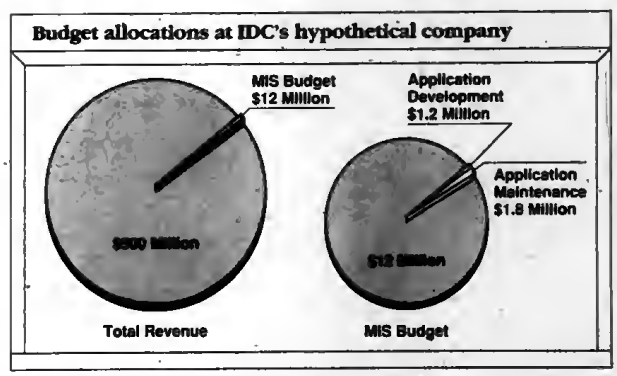
Every hour of downtime costs $2,000 if the system is running 24 hours per day. One day of lost operations per year would represent a total loss of $50,000. More insidiously, a 1% error rate – the equivalent of failing to sell three sellable seats on a 300-passenger airliner – would amount to $1 million per year. Detecting and preventing this error would generate savings equal to three times the expected savings from CASE implementation. With this type of savings, CATI payback periods can be measured in months, rather than years.

WHY DOES MANAGEMENT OVERLOOK CATI?

Today's systems are aging rapidly. This is a result of both business and technology advances. These existing systems are continually revised, and in many cases, completely redesigned and rewritten. The migration from hierarchical to relational database technology is an evolutionary phase that nearly everyone has made. Every effort was, and is, made to affect this process transparently to users. The next step is migrating from the current relational models to object-oriented databases. This step must also be accomplished with minimal impact on users. In order to guarantee this smooth and orderly conversion, the applications staff must have the automated assistance of CATI.

CASE offers clear economic justification in commercial applications – the reduction of existing programmer costs. CATI's benefits are more subtle, but once realized, can dominate those promised by CASE. One way to think of CATI is as an insurance policy. It may be expensive, and it may never be needed, but when it is, the payoff is large. IS setbacks occur in different forms. Some can appear as severe reductions in online system availability. Some will arise when systems experience high-volume peaks. Others will occur when migrating from one system to another. CATI can identify these problem areas before IS implements new applications. Despite these pronounced advantages, bottom-line-oriented top management may be reluctant to spend money on something that may or may not pay off.

Today, justifying CATI must go beyond



In order to illustrate the benefits of CATI, IDC set up a hypothetical company and gave it a realistic budget

One programmer's phrase even upper management understands.

Ooops.

If you've heard it once, you've heard it a million times. Usually followed by a lengthy technical explanation. But what it all really means, in layman's terms, is problems. Big problems.

And no technical explanation is necessary. Because software program errors are no longer just technical problems. They're *business* problems.

The kind that can turn customers away. The kind that can show up in the papers. Or the annual report.

It's no secret that software development is a complicated and time-consuming process. What's not as well understood is the potential for problem—the long-term impact—of less than thorough software testing.

That's where Compuware comes in. With tools for automated testing, simulating real use, and quickly diagnosing and debugging errors.

Compuware offers your business something you may not expect from technical products. Results.

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the traditional piecemeal approach based only on productivity gained by each testing tool. This is perhaps easier than the detailed and sophisticated risk analysis that is also required. Ever conscious of their own bottom line, IS managers may be reluctant to incur these costs. Corporate line management responsible for financial performance must recognize that it is facing a huge risk by not implementing CATI. Management should work together with IS to evaluate potential losses and justify CATI installations.

WHAT ARE IS SHOPS DOING ABOUT CATI?

IDC application development survey respondents are typically and firmly stalled in the application maintenance quagmire. Overall, respondents are currently spending almost 60% of total programmer time on enhancements and repair of existing applications. Almost one-half of the respondents indicated that maintenance required 70% or more of their efforts. Despite the claims of CASE proponents, respondents say they expect little change by 1993. Overall, they expect to gain about 3% more time for new application development.

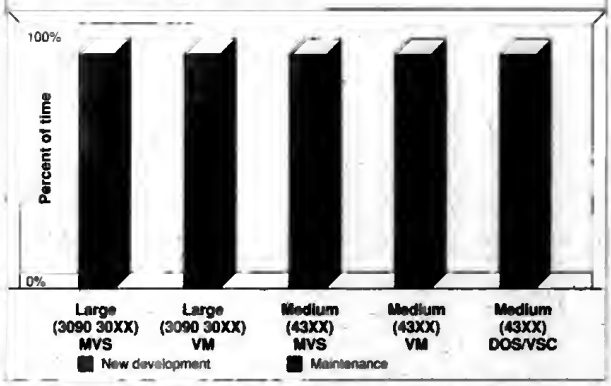
The continuing burden of maintenance and the application development crunch make it difficult for IS management to allocate resources for system testing and evaluation. Respondents' inability to balance their system development life cycles clearly demonstrates this problem. Managers at our survey sites indicate that they are currently allocating slightly over 50% of their total system development life cycles on code generation and program debugging. Less than 20% of total programming time is available for system testing and evaluation.

The number of shops that ignore testing and evaluation, or perform it on an ad hoc basis is alarming. Over 16% of those surveyed do little or no formal testing and evaluation for their new applications. As one industrial user stated, "We do our testing when we have time, or when we are introducing a critical new product. But overall our approach is strictly ad hoc."

Respondents in general report that older CATI tools, including debuggers and online editors, are important parts of their application environments, while newer tools, such as simulation tools and integrated environments, will become increasingly important during the next several years.

The increasing interest in CATI is spurring plans to acquire new tools and systems. Almost 50% of our respondents say they now expect to add new testing and implementation tools in the near future. Even more see a need to add integrated environments.

Time spent on new application development at IBM mainframe sites.



Maintenance continues to outweigh new applications development at Big Blue sites.

IS plans to install CATI will, in part, reflect the concerns of corporate chief executive officers and board members. The American Airlines problem emerged in a financial review by the board of directors rather than from IS. Financial shortfalls burden line management and corporate executives. They are the decision makers best able to evaluate the requirements for, and the economic viability of, enhanced CATI capabilities.

Survey respondents clearly expect senior management to recognize the need for application testing. The publicity that has accompanied recent system failures should significantly increase the visibility of testing and evaluation efforts.

A BRIEF HISTORY OF APPLICATION DEVELOPMENT

Early software developers in the late 1950s and early 1960s routinely automated manual processes by analyzing the work flow and duplicating the existing processes and procedures with computer programs. The emphasis was on understanding the process and then writing programs to significantly reduce both the time and personnel required to complete the manual processing effort. Little thought was given to process simplification, redundant functions and data, or interfaces to other systems.

The programmer functioned as business analyst, systems analyst, coder, tester and documenter of the system. Often the system design consisted of little more than pencil sketches of the process flow and identification of the programs and files required. The primary emphasis was on developing the program flowchart that explicitly defined the decision logic and actions required by each program in the system. Programming teams were small, typically one to five people, hence communication between team members was easily accomplished.

The Emergence of the System Development Life Cycle

In the mid to late 1960s, as organizations began to develop larger and more complex systems with larger programming teams, they found a need to formalize the system development process. System development life cycle methodologies began to emerge that addressed what steps or tasks had to be done and when, to ensure that the system would perform as required by the user community. Typically, most industrial-strength system development life cycles were broken down into life-cycle phases and tasks that defined the major categories and the necessary steps within each phase. The typical phases were planning, analysis, design, development, implementation and maintenance.

The use of this type of approach was characterized as "bottom-up" or "straight-line" development, as most practitioners fully completed phase 1 and obtained user sign-off before proceeding to phase 2. It was typically not until phase 4, which often

came months into the project, that any programs were written. Then it was necessary to fully develop and test each program, integrate programs into subsystems and integrate the subsystems into the overall system.

This often led to significant delays and frustrated users because bugs in the interface programs and the JCL were not found until late in the project. By then, time was short and most of the budget was spent. As a result of these factors and the lack of automated testing tools, test data development was typically left in the hands of the developers, not the users.

Throughout the 1970s, most corporations continued to focus on formalizing their system development life cycles to accommodate the structured design and programming methods being introduced by DeMarco, Yourdan, Gane and Sarson and their compatriots. These methods focused on specific techniques to develop high-level logical models of the system. Then, through a series of stepwise refinements, these techniques first decomposed the logical model into formal design specification requirements and finally into structured programs.

The use of these techniques gradually led developers to recognize that the programming effort could begin immediately after the system boundaries were set and the overall flow determined. However, getting programmers involved as early as phase 2 on such tasks as coding and testing high-level logic and all system interfaces, led to restructured development teams. More debugging aids were also used as testing was conducted throughout the development process.

In a new twist, many organizations also found that end users could become involved in the development process because of their ability to develop realistic test data.

Offsetting the "Waterfall" Approach

As analysts and designers gradually refined the specifications, program details were added to the skeleton programs already created. This process of specification refinement and programming enabled developers to show users increasingly complete results much earlier in the development process. It also allowed them to elicit user feedback while there was still time to make corrections.

Although this approach alleviated many of the problems associated with the "waterfall" system development approach – wherein work is completed in large clumps before feedback is received – developers were still prone to misinterpret requirements. Even though these misinterpreted requirements were normally found when the next version was demonstrated to users, a need for faster user feedback to control project costs and maintain the schedule became critical.

Rapid-prototyping evolved in the mid-1970s to meet this need. It counteracted the waterfall approach by getting users involved early and often. Now as then, a prototype may be an analytical model, a simulation of all or part of the proposed system, pseudo code or screen/report mock-ups with realistic data. In essence, the prototype is comprised of anything that helps the user and developer more fully communicate about the system to be built.

Also in the mid to late 1970s, fourth generation languages (4GLs) began to have an impact on system development methodologies. Fourth generation languages made it feasible to build a throw-away model that simulated key functions of the ultimate system. These key functions accepted input, produced output and for all practical purposes behaved as the final system for the set of functions modeled.

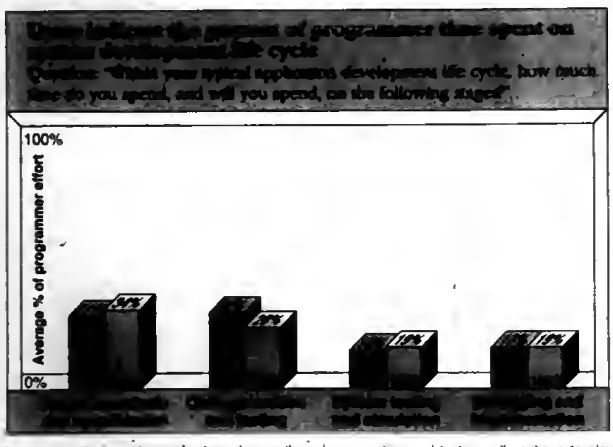
Application generators, or back-end CASE tools, also produced code rapidly. These products enabled developers to implement the rapid-prototyping methodology by rapidly developing incremental versions of a system, reviewing them with the users and incorporating their feedback in the next version. This process was repeated until the system was completed. Developers were in a sense programming in a specification-like language, which significantly reduced the necessary lines of code. Although a few of these back-end CASE tools were available in the late 1970s, they were only used by very early adapters and did not have a significant impact until the early 1980s.

Many prototypes may be built in the process of developing a complex system. Most will be aimed at clarifying/finalizing user requirements. Others may help developers and designers assess database design issues related to the placement of data sets for performance. Or they may define algorithms for complex mathematical calculations, assess final hardware requirements and determine overall system feasibility.

In the early 1980s, front-end CASE tools that performed initial analysis and design became commercially available. They provided graphic interfaces that enabled developers to improve their productivity as well as the overall quality of the development effort.

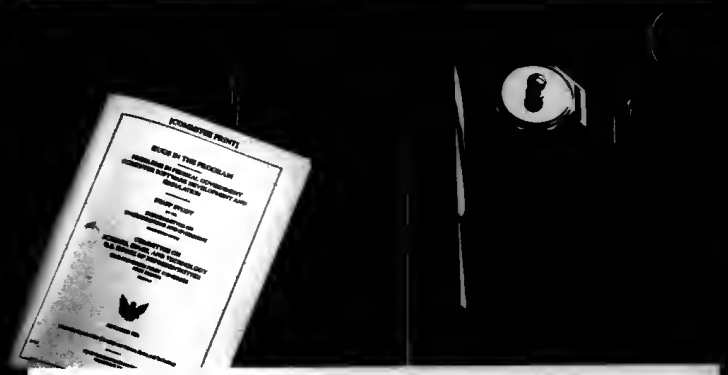
Although these CASE products were introduced with much fanfare, they did not meet with resounding success in the marketplace. Today, only 12% to 15% of mainframe shops are using CASE technology. This lack of market acceptance is primarily due to the failure of the early tools to meet the needs of developers. There are several reasons for this.

First, the tools were primarily focused on new systems development and overlooked systems maintenance. As mentioned systems



Program analysis and specification along with code generation and testing will continue to play prominant roles.

If *they've* issued a report on it, imagine how widespread the problem must be.



The U.S. government recently issued a report on the problems of software programming errors. By doing so, they showed *awareness* of the problem, as well as a *resolve* to do something about it. U.S. businesses have been slow to do either.

Is this just another government report? Is it a problem only the government is facing? Not by a long shot.

Then just how widespread *is* the problem? Is there reason to be alarmed? Only if your company uses any software programs.

If you do, we'll be happy to send you a copy of this government report. Along with some information on Compuware's automated testing tools for software programming.

Then you can learn more about the problem. As well as the solution.

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maintenance accounts for 60% of total man-hours within the average IS shop today.

Further, they did not support tool integration. For example, developers often used one CASE tool for analysis and another for design. And CASE productivity gains were difficult to quantify. Most IS shops did not have an adequate history of performance metrics to quantify and cost-justify the productivity gains from CASE.

Finally, CASE products did not support flexible applications. Developers needed flexible software that could be easily adapted to new technology and new methodologies.

Only recently are CASE products arriving that meet developer needs. Application development frameworks are being introduced that allow developers to integrate the tools from several vendors and perform all of the tasks associated with system requirements, design and code generation.

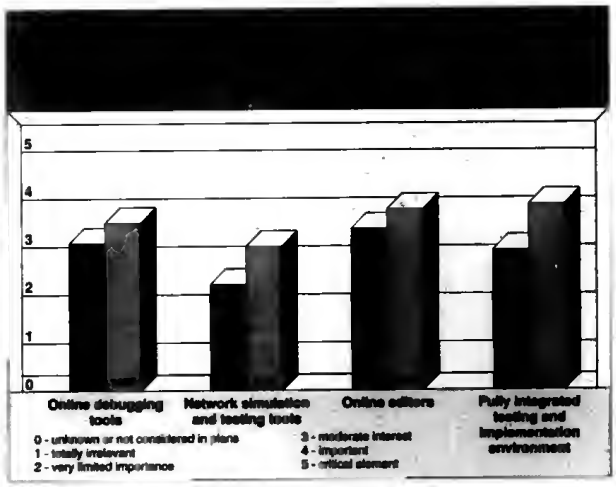
THE IMPACT OF SAA

IBM's Systems Application Architecture (SAA) emphasizes the need for meticulous test and evaluation procedures. SAA codifies IBM's view of the information processing environment of the 1990s by describing how all IBM computers will be able to intercommunicate. One key SAA concept describes distributed- and cooperative-processing environments. It will be implemented in both development and production processing arenas.

Developers working in an SAA environment will use programmable workstations as their primary development tools. However, the actual application development processing may occur on mainframes or servers connected to the developers' workstations. In order for this scenario to become reality, testing and debugging tools that are supported on all SAA platforms must be developed.

In the SAA world, users may enter their requests from a workstation running under OS/2. The requests will then be routed through a Unix server and transmitted via a Systems Network Architecture (SNA) network to a remote mainframe. It is unimaginable to think that anyone could design, develop, test and implement a quality application in so complex an environment without CATI.

Today, virtually all system failures can be traced to software, hardware or communications sources. Cooperative processing complicates these problems beyond simple comprehension. Software, hardware and communications are joined by the synchronization of data at the mainframe, server and workstation levels. Again, realistic problem resolution will not be possible without CATI.



Users indicate a clear if gradual movement toward integrated CATI

LEADING-EDGE USERS

CASE and CATI are coming of age at about the same time. Leading-edge users are just beginning to realize the potential benefits of CATI tools. However, the situation is changing. Results from IDC's survey indicate that 60% of respondents will have some form of CATI installed by 1995.

We asked three leading-edge users to describe their experiences and help us convey the actual impact of CATI tools in their environments. These users represent a broad cross section of CATI users. The first user experienced significant programmer productivity gains in addition to increasing system availability dramatically. The second user used CATI tools to facilitate a major hardware/software conversion effort and retained the tools for application development. The third user determined that CATI tools offer a documented, supported alternative to internally developed utilities in a distributed application development environment.

Peerless Insurance Company

Peerless, a subsidiary of Nationale-Nederlanden North America, is an insurance company with offices in Keene, N.H. It is an IBM 3090 shop, which recently upgraded to a 3090-180E. Peerless handles most traditional insurance applications, including policy management and claims disbursal. It has experienced some normal problems with system availability. One problem in particular plagued the draft-processing program, which dispatches payments to claimants. As Russ Burns, systems consultant notes, "This is the type of application that generates a lot of heat when it goes down. Not much light ... but a lot of heat."

Peerless installed CATI tools to deal with these kinds of seemingly trivial problems that nonetheless were very difficult to pin down. Before CATI, IS was running at about 98% availability, with CICS regions going down approximately once every two weeks. Based on initial investigation and educated guesses, IS expected to find that 50% of the downtime resulted from storage violations under CICS. The group thought its CICS programs were looking for information that was either in the wrong place or the wrong form.

Peerless' management decided to bring in CATI tools to trap these storage violations. Storage violations are difficult to detect because they often lie buried in the logic of complex subroutines. They can be unearthed with storage violation trapping. This process traces the errors and pinpoints the errant code lines. The time-tested and highly unpopular alternative involves reading dumps that describe CPU memory contents.

Burns and other managers also recog-

Some companies spend more time planning for office parties than for devastating software crashes.

It's a rare company that doesn't spend weeks, even months, planning office soirees. And yet few companies devote the same energy to anticipating software problems that could quickly take them out of the party mood.

Why? It could be that time and other factors form a perceived barrier to thorough software testing. But the potential for problems from less than thorough testing is well known: a *single* software error can have serious effects on a company's business.

Compuware's automated testing tools for software programming work to eliminate these problems in a variety of ways. But they will only do so if they are a *planned* part of the testing and implementation process.

Plan to have Compuware get involved in your next project. Then, the only crashes you'll have to worry about are people who crash your office parties.

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nized that in addition to trapping storage violations, CATI tools would improve application programmer productivity. They knew these productivity gains would be icing on the cake if they could cost-justify the new software based on increased availability. Their calculations indicated that they could justify the software acquisition if the tools helped programmers find half of their storage violations.

"The hard justification would follow easily from increased availability," Burns notes. "Based on the hourly cost estimates we used for planning, we estimated that eliminating 25% of our downtime problems would result in a payback period of less than 18 months."

Their estimates proved to be conservative. Peerless programmers were able to identify storage violations that generated virtually all of the CICS region downtime. The problems were relatively simple. In one case a program placed information in a specific position and passed the address to another portion of the program. Unfortunately, still other parts of the complex program overwrote the information before it could be used. This and other storage violations were sometimes painfully obvious once the CATI tools highlighted problem sources. Without CATI, the best programmers may never have found the problems in the briar patch of assembler language code.

The fixes indicated by the CATI products increased availability to over 99%. The savings in CPU time alone justified their acquisition in less than six months. The fringe benefits, including better production programs, fewer production problems and increased application programmer productivity, continue to accrue for Peerless. "This was the best software acquisition decision we ever made," Burns declares.

IDC asked Burns which CATI features mattered most to application development programmers. He mentioned three. "First, application development programmers need source code-level debugging to facilitate corrections. Second, they need the ability to trap storage violations within macro assembler. And third, they need a user interface that's easy to learn. Our people who were used to CICS debugging were very pleased with our acquisition."

The bottom line, however, focused on availability and user issues. "The biggest impact of our acquisition was on our user clients," Burns says. "They saw better than a 50% reduction in downtime. And we save directly on system cost. A CATI purchase should be easy to justify to management based purely on hard dollars associated with availability without resorting to claims of increased programmer productivity. You can home in on the problem without tons of paper."

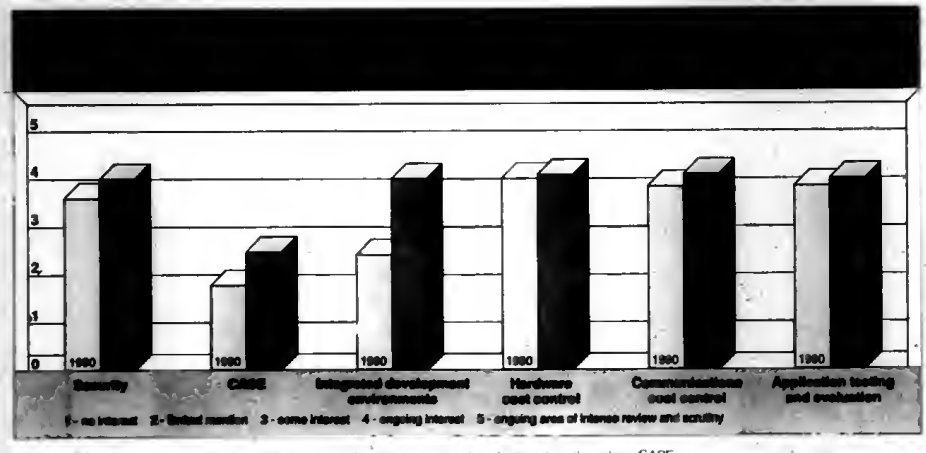
In mid-March 1990, the data center resources from Nationale-Nederlanden North America were consolidated in Indianapolis, Ind. While a significant portion of the application development staff from Keene was relocated to the new information home, a core application development group remained to supply local support. CATI tools have become increasingly important to this staff, as it will not have continual contact with a large number of associate developers.

Federal Home Loan Bank

The Federal Home Loan Bank (FHLB) concentrates on relatively low-volume/ high-value transactions. It was previously running check processing on several Burroughs systems at regional sites. IS developed software centrally and downloaded to remote systems. However, increasing loan volumes led the bank to a central IBM system linked via channel connect to check processing systems at the remote sites. The migration to IBM also led to changes in testing and implementation strategy.

According to Jerry Bassett, FHLB vice-president of MIS, "We recognized early in the planning stages that we would be moving to a very different testing and debugging environment. Our programmers were comfortable with the Burroughs environment, which provides considerable support for application testing and debugging. The IBM environment is quite different. We decided to use CATI tools as an alternative to working our way through the dumps from IBM."

CATI tools represented a key part of the bank's migration process. It had a relatively small application development staff, which was introduced to the IBM system and JCL. Several additional programmers came on board to handle some of the IBM system's



Users anticipate more top management interest in application testing and evaluation than they do in CASE

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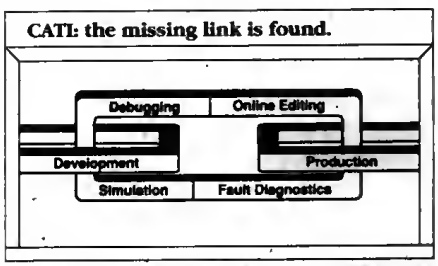
quirks. Testing tools significantly simplified their tasks.

The selection process was straightforward. The bank brought in the major contenders and quickly evaluated each product. Staff members were familiar with the products and reached a consensus on specific tools. FHLB also looked at larger, more complicated application software packages with some built-in assistance but decided that smaller was better for its needs.

The transition period went smoothly, although some programmers found the IBM environment difficult and cumbersome at first. Ultimately, however, they came to appreciate the greater power and flexibility at their installation.

The FHLB staff migrated 18 major systems onto the IBM hardware, working primarily with VSAM files and making extensive use of CATI tools. The staff complemented the testing environment with traditional parallel runs and test periods, permitting a final migration of all 18 new software systems in one day. As Bassett says, "We would have made it without the tools, but we wouldn't have done it in the same time frame."



Debugging, simulation, fault diagnostics and online editing are the key building blocks of CATI

Boise Cascade

Boise Cascade offers a third perspective on the benefits of CATI. The company maintains a highly distributed application development environment. Central facilities provide support, training, consulting and new product evaluation for the distributed application development centers.

Programmers in the application development centers developed numerous utilities over the years. However, maintaining and documenting these utilities represents a significant problem. The programs offer various types of interfaces, including control cards and switch codes. Users must remember multiple interfaces and operating characteristics.

CATI offers the benefit of a single consistent user interface. Existing products also provide active vendor support and strong documentation. These latter qualities become even more important as Boise Cascade evaluates strategies for implementing the integrated approach of AD/Cycle.

The decision to install CATI tools was easy. According to Gerry Hough, lead programmer analyst, "We do not require extensive cost justification. We work by the seat of our pants, allowing us to use our collective experience and judgment to determine if specific software packages are worthwhile. Those of us who have been here long enough know."

Hough's staff set up procedures for users who were accustomed to specific capabilities in the old utilities. Application development programmers are now actively using the new tools. "We see lots of demand for resources to handle the utilities," Hough says. "This is one product that just serves their needs. And the vendors provide support and documentation."

Hough reports he realized significant savings during a recent conversion. "It happened that I was doing both the conversion and the evaluation, so I knew the product from both sides. We saved many hours during that particularly huge conversion job."

Boise Cascade still sees additional requirements. In particular, the company is interested in obtaining CATI capabilities on PC development systems. "We need to be able to develop and test using mainframe-size file structures. The lack of test file manipulation facilities and LAN change management control products is slowing our move to PC development platforms," Hough notes.

MANAGEMENT RECOMMENDATIONS

The overnight batch system of 10 years ago could easily absorb errors and ad hoc testing, evaluation and debugging operations. The networked online transaction processing systems that form the core of applications in the 1990s are far less tolerant. Errors that meant long night hours for systems programmers in the 1970s may mean millions of dollars in lost revenue in the 1990s. Corporate management must respond to the obvious economics of enhanced testing and implementation tools.

It must also recognize that CATI offers positive competitive advantages in addition to reducing the impact of problems. Systems that sustain unexpected loads through testing and planning can provide significant corporate advantages. How can management gain access to these benefits? There are several steps:

- Review your planned and installed mission-critical systems. Be sure that you and your board of directors understand the extent to which you rely on specific systems for the ongoing operations of your corporation.
- Evaluate the cost of downtime. Develop a clear, although not necessarily exhaustively detailed, concept of your financial loss if your systems are unavailable.
- Evaluate the cost of possible errors. What will your company lose if your systems sustain a 1% error rate?
- Develop a methodology for identifying possible systematic errors. How would you know if your system errs significantly? You should identify conditions that indicate potential problems. Many large shops have installed, or are installing, executive information systems that alert senior management to problems by department, operating group or functional activity. Recognize that mission-critical applications are as important as physical production processes. Develop the same types of alerts and exception reports for your systems.
- Ensure that IS recognizes the importance of thorough testing and evaluation – and provides the state-of-the-art tools for required monitoring performance.

Complex information systems will determine the ability of today's corporate leaders to deliver the quality their customers deserve and the profits their boards demand. However, increasing corporate reliance on these systems, and exponential increases in their complexity, are exposing these corporate leaders to tremendous financial risk from catastrophic system failures. IS executives must remain vigilant in their efforts to minimize these risks.

CATI provides a powerful weapon in the battle against system failure. Integrated testing and implementation tools complement emerging CASE technologies. They accommodate the mandates of SAA by easing the introduction of cooperative processing. And they are critical in large open systems environments. The next 10 years will reward leaders with strong development plans. It will deal harshly with the timid who procrastinate.

A cure for the common code.

You don't have to go too far in business to find out about problems. Just read the morning mail or your phone messages.

But finding out about solutions—that's something else.

If anything you've read about software programming errors sounds like a problem you'd like to avoid, you've just found the solution.

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We've recently put together some case histories about how businesses like yours have used Compuware products. Call or write for a copy.

Then, along with the problems in the morning mail, you'll find solutions, too. In the package marked Compuware.

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COMMENTARY

Richard Pastore

The longer picture

A new-car buyer for the past 30 years, my father decided to save quite a bit of money last year by purchasing a used late-model Nissan Maxima. Used cars had always carried a stigma of inferior quality for Dad. What convinced him to take a gamble this time? It was the manufacturer's reputation for enhanced technology, a lengthy warranty and endorsements by other drivers and mechanics.

Similar factors may increasingly tempt PC shoppers to pass up the pricey, premium-brand machines from IBM and Compaq and — rather than buying "used" — save thousands buying boxes from aggressive second-tier vendors like AST or Dell.

Many of these clone firms are no longer the me-too companies they were when they began life. Some, like ALR Research, are whipping up technology advances while reining in prices. Others, such as Wang Laboratories, are offering aggressive warranties and money-back guarantees to add a dollop of security to the sweet deals. Also, some of the older second-tier players like AST have been around long enough to

Continued on page 70

Taking aim at the workstation world

IBM prepares full-scale assault with RS/6000

BY JAMES DALY
CW STAFF

AUSTIN, Texas — Across the road from IBM's central Texas headquarters, the bulldozers work continuously.

By early next year, the churned-up muddy construction site will be transformed into a network of offices and laboratories that will serve as a command post for what the firm has called one of the most important offensives it has ever launched — conquering the burgeoning workstation market.

When the RISC System/6000 workstation series was announced four months ago [CW, Feb. 19], IBM Vice-President Nick Donofrio said that IBM planned to transform itself from a shadowy presence in the workstation market to one of its top three vendors.

IBM is planning to provide briefings on the RS/6000's progress and future today.

Coming from all sides

However, while the family of nine workstations and servers has been hailed for its versatility and power, the technological strengths of the RS/6000 may be its most temporary boasting points. The reason is that Sun Microsystems, Inc., Hewlett-Packard Co. and Digital Equipment Corp. have promised leapfrog technology that threatens to leave the RS/6000 in the dust.

To IBM, them's fighting words. "We are not going to let the RS/6000 stagnate," said Phil Hester, director of the Advanced Workstation Division.

In a recent interview, Hester described an ambitious technological schedule that he hopes will maintain the momentum he says the RS/6000 line has already gained.

Hester's five-year battle plan includes the following:

- With performance capabilities doubling every 12 months, Hester said IBM is going to push the technology hard.

IBM scientists are working on machines capable of running at between 40 MHz and 50 MHz within the next two years, moving up to 60- to 70-MHz systems by 1994. Also, a model capable of processing 100 million instructions per second, more than double the power of the current line, will be available by 1994.

- Productivity will also be fueled by the increased use of parallelism in the RS/6000's design, Hester said.

At the introduction of the workstation, officials demonstrated a view of future multiprocessing capabilities, including three workstations linked together to run a complex graphics application.

- The 64-bit hardware architec-

Continued on page 69

Rookie year

The RS/6000 workstation series, of which IBM has shipped 1,000 units, is in for a string of changes

Source: International Data Corp. CW Chart: Tom Monahan

Second Hypercard version adds versatility

BY JAMES DALY
CW STAFF

Apple Computer, Inc. spruced up its popular Hypercard program recently with the release of a revamped version that includes more than 100 new features.

Hypercard is an application that has been packaged with all Apple Macintosh computers shipped since 1987, wherein screens appear as index cards and users make notes, type or draw on the cards just as they could on paper index cards. The cards are grouped in related "stacks," and buttons on each card can be programmed to do a variety of things, from dialing a phone to linking one card to another.

New additions with Hypercard 2.0 include the ability to create multiple windows and view several stacks concurrently, new font and style menus and the ability to create cards ranging in size from one to 18 sq. in.

The Hypertalk programming language was also enhanced with a suite of debugging tools as well as an automatic runtime compiler, which allows designers to build more sophisticated programs and improve the feel of the stacks, Apple officials said.

The revision is the first major upgrade since the application was introduced in 1987.

Hypercard 2.0 will be available in volume this month. Software-only upgrades will be available through user groups, book publishers and Apple dealers. Hypercard 2.0 can also be purchased separately for $49.95, the company said.

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COBOL/2 Workbench is a "superb interactive environment" and "professionally crafted," according to recent product review.

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2. Ability to meet needs and fit habits of skilled programmers (1.00)	10
3. Sequential integration of tools (1.00)	9
4. Quality of documentation (0.97)	10
5. Quality of support for existing mainframe applications on PC-based COBOL implementations (0.97)	9
Weighted Score	**9.6**

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MONO

Traditional PC LAN

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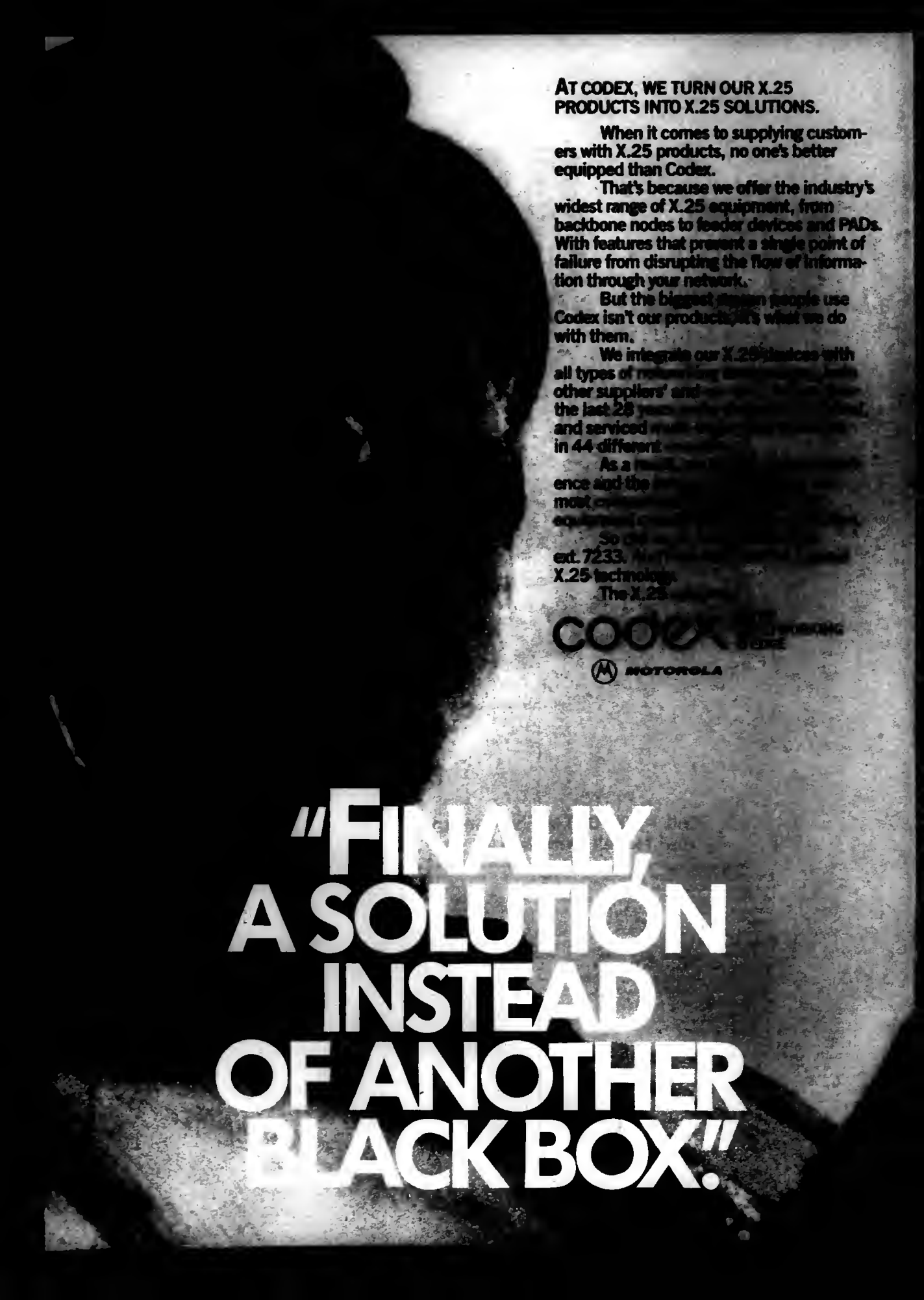
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Physicist turns to Sun; NASA sees the light

ON SITE

BY JAMES DALY
CW STAFF

CAMBRIDGE, Mass. — The federal government is known for a lot of things. Simplicity is not one of them.

At the Harvard-Smithsonian Center for Astrophysics, researcher Ed Kellogg knows that if you want to sell an idea to an organization as labyrinthian and bureaucratic as the National Aeronautics and Space Administration, you present your ideas clearly and precisely — or they may never see the light of day.

But that just was not happening. When Kellogg joined the center two years ago as an astrophysicist, government proposals were often presented in mind-numbing volumes filled with dense text and complicated mathematical equations. To make matters worse, the preparations were created using either a large-print typewriter or a PC connected to dot matrix printers.

When visuals from the reports were put in an overhead projector, the approach was often ham-fisted, with unprofessional visuals containing neither borders nor identifying logos and on-screen print that was difficult to read, Kellogg said.

"People went away from the meetings thinking we hadn't accomplished much when, in fact, we had," Kellogg said. "As a result, much of the work we did and the progress we made was hidden."

There'll be changes

Kellogg's patience was running short. Changes had to be made, swiftly and boldly. His first target involved a project the center co-manages with NASA: the Advanced X-Ray Astrophysic Facility (AXAF), a space-based observatory scheduled for launching next year and expected to orbit the Earth for 15 years. The AXAF will measure cosmic X-rays that are invisible from Earth, test fundamental laws of physics and hopefully answer questions about the history and fate of the universe.

Kellogg's first efforts will be directed toward a plan the center had to calibrate the X-ray telescope before lift-off.

Like his colleagues — the 30 astrophysicists and 30 engineers make up the High Energy Astrophysics division — Kellogg used one of the division's 60 Sun Microsystems, Inc. workstations for engineering tasks. Now he decided it was time to teach an old dog new tricks.

The Sun workstation's *multitasking capabilities speed layout*

After searching through Sun's catalog of third-party software, Kellogg chose Frame Technologies Framemaker software and soon began sketching graphs and diagrams on his workstation.

Soon be was performing complex astrophysics calculations and graphics layouts. The windowing environment enabled him to simultaneously run the electronic publishing package in one window, display a spreadsheet exhibiting data from an astronomical database in another and run a directory executing Unix commands in a third. A fourth window offers electronic mail.

His first project turned out to be an elaborate one, using 60 viewgraphs. But although he lacked previous experience with Framemaker, he averaged a mere six minutes per sketch. First, from a graphics library, he selected three geometric shapes: two circles and a rectangle. He then quickly arranged the shapes into a diagram of the telescope and labeled each part. To polish up the image be inserted cross-hatching and wrapped a border around it.

By duplicating the diagram and tailoring it for each successive viewgraph, he clarified the main points of his presentation. The preparation that once took two days to prepare using a textual approach now took less than six hours, including printing and proofing. "It looked like I spent a lot of time on the graphics, but in fact I hadn't," he said. "If I had used only text in my presentation, the headway we made probably wouldn't have been so apparent."

The electronic publishing setup has quickly become an integral part of the division and recently proved vital in securing a deal to design and construct a sophisticated X-ray detection system for NASA.

"We were already convinced we were best equipped to handle these jobs," said a proud Kellogg. "Using this setup now enables us to convince NASA."

Quarterdeck, Microsoft see eye-to-eye

As firms talk standards, Desqview, QEMM releases fill Windows void

BY CHARLES VON SIMSON
CW STAFF

SANTA MONICA, Calif. — Quarterdeck Office Systems, Inc. recently took a step in sync with rival Microsoft Corp. when it announced new releases of its Desqview multitasking system and Expanded Memory Manager (QEMM). Desqview 2.3 will allow users to run DOS-extended programs and Windows graphical applications as well as conventional character-based applications.

QEMM 5.1 provides tools for integrating current installed DOS extended programs into Microsoft's Windows 3.0 environment. QEMM 5.1 will allow Windows 3.0 users to load terminate-and-stay-resident programs, device drivers and DOS resources into high memory when running in real, standard or enhanced modes of Windows 3.0. These types of applications are not compatible with Windows 3.0 by itself, the company said.

By moving network drivers and memory-resident programs out of the DOS address space, applications have more room to run in memory.

"It was pretty clear a year ago that DOS extended applications and Windows 3.0 were going to have problems," said Richard Able, Windows 3.0 product manager at Microsoft. "There was a sizable difference between Windows and the virtual control program interface that had emerged as the standard protected mode interface for most applications."

Executives from microchip manufacturer Intel Corp. were instrumental in arranging the meeting between Microsoft and Quarterdeck Office Systems that led to development of a compromise architecture.

Able said that Intel realized that the divergent interface standards would confuse the market for its 80386 microprocessor products. "Intel acted as a catalyst, and we got together the DOS protected-mode interface. Until that standard is set, the Desqview and QEMM products fill a significant void in the Windows 3.0 area. It is an important set of products for the industry," Able said. Currently, no applications work under the DOS protected-mode interface standard.

"Microsoft did not choose to make high memory available to Windows standard or enhanced mode users," said Therese Myers, president of Quarterdeck. "This revision of QEMM will empower Windows users who intend to run their existing DOS programs in Windows 3.0."

Desqview 2.3 will allow users of Quarterdeck's environment to run DOS programs, 286 extended DOS applications such as Lotus Development Corp.'s 1-2-3 Release 3 and 386 DOS extended programs such as Borland International's Paradox 386.

> INTEL realized that the divergent interface standards would confuse the market for its 80386.

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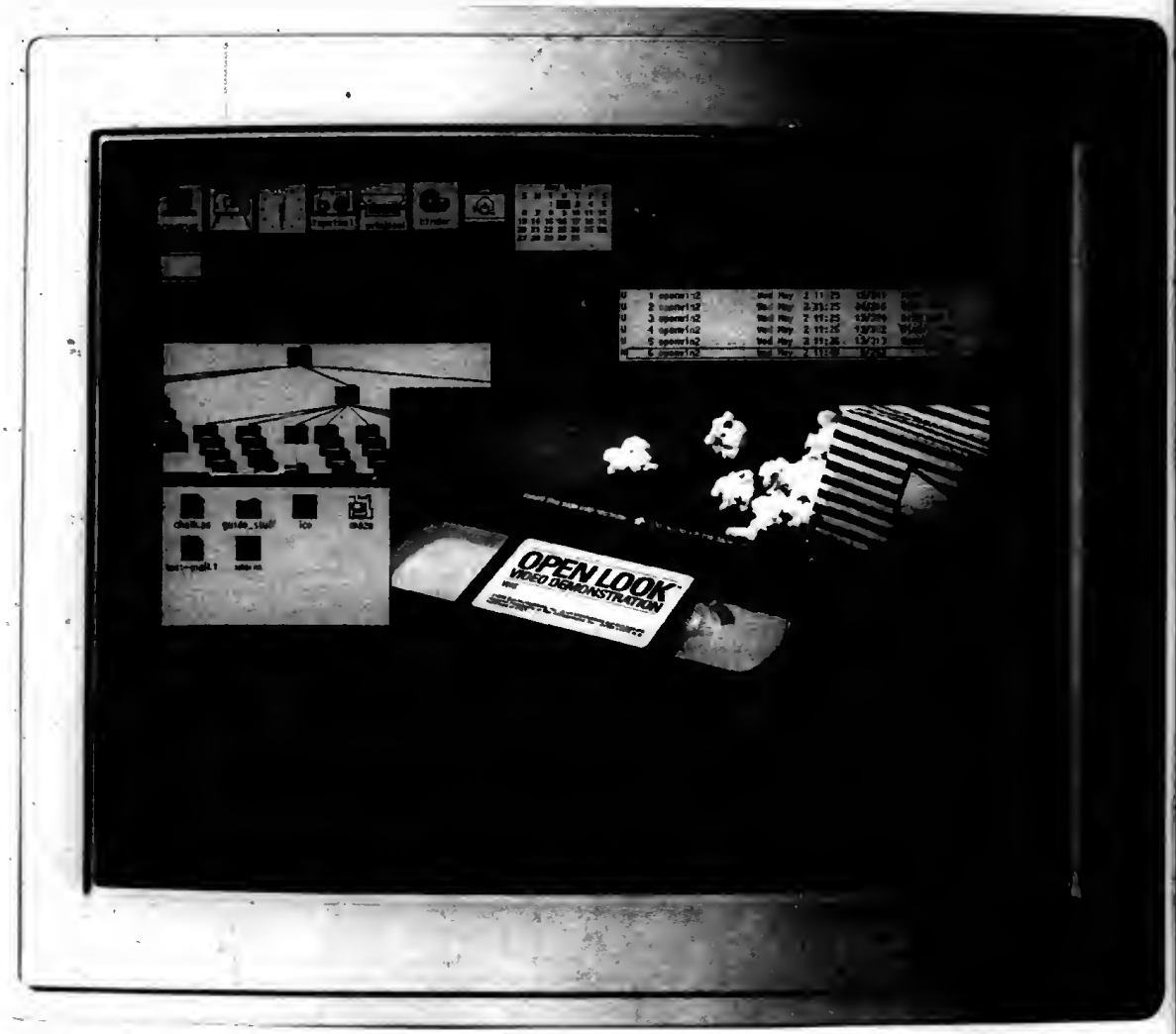

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ATMs deal in wheels now

National, Budget rollout unmanned car rental booths

BY MICHAEL FITZGERALD
and ALAN J. RYAN
CW STAFF

After a long flight — probably with delays — most travelers are not keen on the idea of queuing up behind eight or 10 other people to sign a prearranged car rental contract. At least that is what National Car Rental System, Inc. is counting on.

Similarly, consumers are not too thrilled with having to run about town looking for a car rental office after dropping off their own cars for several days of expensive repairs. That is what Budget Rent-A-Car figures.

Beginning in September, National will roll out the second installment of its Smart Key technology — Smart Key II — which allows for quick car rentals for its frequent customers without the intervention of counter personnel. By the end of the year, 200 of the automated teller machine (ATM)-type interactive units will be in place at National locations, predominately at airports.

Meanwhile, Budget is installing 40 automated systems; however, unlike National, it is focusing its ATM-like remote transaction booths in mall locations rather than at airports or hotels and is targeting the system at new customers.

Budget tested the mall concept by installing four booths at Sears Automotive Centers malls in the Dallas-Fort Worth area. Based on the test, Budget has ordered 40 of the approximately $25,000 booths for installation in Minneapolis; San Francisco; Seattle; Hawaii; Raleigh-Durham, N.C.; and Vancouver, B.C., which are all strong markets for Budget. The company has options on another 60 booths from RT Technologies, a San Antonio-based start-up.

Customers sit in the remote transaction booth and connect to a central reservation desk via a phone. A reservation clerk directs the customer through the rental process, using video images transmitted via the computer to verify driver's licenses and contracts. Customers slide their credit cards through a magnetic-stripe reader, and the computer processes the information and prints out a contract. The camera verifies that the customer signs the contract, and an attached carousel deposits the appropriate keys with the customer. The average transaction takes 5 minutes.

Budget's *remote transaction booths use video images to verify contracts*

National's system is built around a personal computer linked to National's central processor in Minneapolis, according to Chief Information Officer Jack Livingston. Access to the system and the cars that can be delivered through it can be controlled in real time from the company's Minneapolis headquarters, he said.

Using Smart Key II, the customer would walk up to the machine at an airport or other fleet location. Using a National credit card, the user can see an inventory of available rentals at that location. The user selects a car, takes a receipt from the machine, goes to the lot and drives off with a car. The only human intervention will be confirmation of the rental by the lot attendant as the driver leaves.

The original Smart Key machines — which actually present keys to the customer — debuted in March 1989. They will still be used in smaller airports and less-secure National lots where keys cannot be left in the cars.

Topscan targets tedium of document scanning

BY JIM NASH
CW STAFF

Since it is impossible to fit a human brain into an optical character recognition (OCR) system to spot mistakes, it can be tricky to transfer hard copy to a database.

Scanner users have long bemoaned the task of paging through an electronically stored document and the original in order to reconcile errors. However, at Coopers & Lybrand, a consulting and accounting firm based in New York, users think they have found the balance between intelligence, speed and cost. Three months ago, the firm picked up Topscan Professional. Introduced last year, Topscan is an OCR firmware product by Calera Recognition Systems, Inc. in Santa Clara, Calif.

Another firm, marketing consultants The TDA Group in Palo Alto, Calif., has picked up a downsized software version of Topscan, Wordscan Plus/AT, designed for less production-intensive settings. The Topscan series of products was formally introduced last month.

Intensive use

Topscan has document management capabilities intended for heavy production use. Among the features is a forms-identification program that allows Topscan to identify which form it is reading so it can scan the correct sections quickly. Wordscan lacks most management features because it is aimed at the more casual OCR user, a company spokeswoman said.

Both run IBM or IBM-compatible platforms based on Intel Corp. 80286 and higher, with a minimum of 2M bytes of memory.

Coopers & Lybrand senior associate Andrey Hankewycz said the firm processes 50 to 100 three-page management reports with tables each week. Those documents are scanned on a Hewlett-Packard Co. Scanjet Plus and, until recently, were electronically stored with an older Calera OCR device, Truescan, he said.

Hankewycz said he switched three months ago to Topscan Professional for one basic reason: Topscan reduced the number of steps involved in processing paper, compared with its predecessor. He said Topscan beat out its competitors, Caere Corp. and Xerox Imaging Systems.

TDA Group partner Bob Tabke also said he found the new Topscan/Wordscan programming superior to previous Calera products. "It's at least two or three times faster in terms of correcting the copy to match the original," Tabke said.

In preview mode, both Topscan and Wordscan allow operators to select specific fields on each page to be scanned and stored, eliminating the need to process whole documents. In correction mode, they use different colored highlights to cite suspected spelling errors, wrong characters and words not in their dictionary.

Other systems use a tilde or an asterisk to indicate problem words, which makes it more difficult to work through copy quickly, Hankewycz said. Tabke said he has been unable to find these features in Wordscan's $595 price range. Wordscan runs on either an Intel 286 or 386 processor with Microsoft Corp.'s Windows 3.0.

Calera offers a pop-up window in both products that, on command, will display a highlighted word exactly as it was recorded by the scanner. This feature, Hankewycz said, virtually eliminates the need to go back to the paper original in the correction process.

The Topscan computer board costs $6,495, combined with a Calera scanner, it runs $31,950. The Wordscan software-only product costs $595; the firmware product, Wordscan Plus AT, costs $3,995.

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Truckin' down the road to efficiency

ON SITE

BY SALLY CUSACK
CW STAFF

KNOXVILLE, Tenn. — With a fleet of 41 tractor-trailer trucks delivering foodstuffs to 7,000 client sites across the Southeast, the folks at Institutional Jobbers Food Service Distributors, Inc. know the importance of being at the right place at the right time.

Looking to boost route productivity by decreasing unnecessary mileage, Institutional Jobbers recently replaced its minicomputer fixed-routing software system with a more flexible personal computer package. The software, called Trucks, is from STSC, Inc. in Rockville, Md., and Version 6.0 of the program is currently whirring away on the food company's Compaq Computer Corp. 386/25 computer under the MS-DOS operating environment.

"The problem with the previous system was that it was done manually on the Hewlett-Packard 3000 machine," said Lowell Cummings, the company's transportation supervisor. "Adjustments took a while, and we couldn't automatically account for things like product fluctuation."

Fluctuations are a fact of life at the food distribution organization. The company delivers goods to restaurants, schools and hospitals in nine Southeastern states and reports $150 million in annual sales.

Keeping orders in order

Trucks 6.0 provides a database that sorts by city, state, Zip Code, customer number and customer name and computes all orders by latitude, longitude and proximity to the distribution center. The program then plots optimum delivery routes covering the least distance on easily traveled roads.

"It's taken the guesswork out of delivery times," Cummings said. "Now, if a key customer needs a 10 o'clock delivery, we can guarantee a 10 a.m. delivery."

Cummings said that while business has increased, his company has actually eliminated six routes per night since the system was installed in April. "We're driving about 40,000 miles a month less, and that gives us a very significant dollar savings," he noted.

After looking at several software programs, including Roadshow from Routing Technology Software and Roadnet Technologies' Roadnet, the company decided that STSC offered the best overall package for their purposes. The Trucks package did not have as many pretty pictures to look at, Cummings said, but the answers were better. Ease of use was also a deciding factor in the purchase.

> "WE'RE DRIVING about 40,000 miles a month less, and that gives us a very significant dollar savings."
>
> LOWELL CUMMINGS
> INSTITUTIONAL JOBBERS

The installation process took approximately three months, with a significant chunk of that time devoted to cleaning the customer database, Cummings said. STSC was onsite for three weeks during the installation process, he added, and has followed up with very good phone support.

The software's flexibility is another key to its success at Industrial Jobbers. The stops are always changing, according to Cummings, and there are a number of parameters involved. These include Department of Transportation specifications on the number of hours any one driver may log in a single day, individual truck weights and volume of cargo, as well as destination and customer location. The package prints out reports on variable cost per mile, cost per hour and number of dispatch calls.

Cummings said the company is now paying an incentive plan based on the Trucks program. If the driver runs faster than the package predicts, he gets a bonus. "This way, the faster guys get rewarded, while the slower ones get penalized," he said.

TI plans OS/2-based tool set

New IEF components to parallel MS-DOS counterparts

BY JOHANNA AMBROSIO
CW STAFF

Texas Instruments, Inc. is planning an OS/2-based tool set for the Information Engineering Facility (IEF), to ship sometime this summer.

According to marketing manager Gregory E. Mann, the new IEF components will allow users to develop and test models for systems using OS/2 workstations. The models can then be used to generate code for other hardware platforms such as MVS.

The OS/2 versions of the Planning, Analysis and Design modules will be very similar to their existing MS-DOS counterparts, Mann said.

New for the OS/2 world is the Construction Toolset, which generates Cobol source code and relational database definition statements. Construction currently works with DBM, the database management system that is included with IBM's OS/2 Extended Edition, although TI may add other DBMSs in the future, according to Mann.

Also, TI is developing an IEF tool set for Unix workstations, although the company is not ready to formally announce that, Mann added.

In the meantime, the four OS/2 tools will sell for $23,800. A trade-in program is available for current users of the DOS packages.

RS/6000

CONTINUED FROM PAGE 61

ture will come into its own within the next three years and be incorporated into the RS/6000.

"The 32-bit architecture is running out of gas [in the workstation]," Hester said. "We'll need to address far more than 4G bytes of addressable memory."

Additionally, a 16M-bit memory chip will be standard on the machine within three years, Hester said.

- Although low-cost RS/6000 models are planned, Hester said that the top-priority "real-life" systems will be priced at $10,000 and up.

"It doesn't take too long to figure out that the bare-bones prices that people advertise are a long way from what it's going to cost to put a usable machine into an organization," he said.

- The availability of a wide range of software applications will go a long way in selling the RS/6000, according to Hester, and be promised "improved" but unspecified advances in IBM's compiler technology.

Meanwhile, IBM will continue to improve the POWER architecture's functionality and power — for example, by shrinking the circuitry.

Break in tradition?

Hester added that IBM is considering breaking with tradition by licensing the POWER architecture, but he would not speculate on who the interested parties would be.

Analysts, however, have put forth one possible client: Steve Jobs' Next, Inc., an IBM partner that has said it will produce a machine based on reduced instruction set computing technology.

While Hester did express interest in the chip-design work being done in gallium arsenide by people such as Cray Research, Inc. founder Seymour Cray, he predicted that in the foreseeable future, IBM's Personal Computers and workstations will continue to be based on CMOS technology.

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StorageTek.

Pastore

CONTINUED FROM PAGE 61

have acquired a word-of-mouth reputation from users (for good or bad).

All of this adds up to a more convincing argument to take the plunge and abandon the old-fashioned nostrum of "the costlier the better."

Everybody has heard horror stories about crummy clones. Kaypro — its new management admits — shipped out a lot of defective machines, but that company has since filed for Chapter 11. But companies such as AST and ALR have proven their staying power and have been gaining market share, according to researchers. These companies' current offerings and future prospects have landed them on the most-favored lists of Wall Street analysts such as Paine Webber's Stephen Smith.

Furthermore, relatively venerable companies such as AST and Wyse have logged their share of ringing endorsements from longtime customers. Melvin Boyer, MIS director at Louisiana-Pacific Corp. in Portland, Ore., says 75% to 80% of the company's personal computers are clones from AST and other vendors. "AST does make good equipment; we do not have any problems in that arena," he said.

"From what I could determine, Wyse is as reliable as Compaq," said Don Race, director of information systems at Cedar Fair, an amusement park partnership in Sandusky, Ohio.

Companies that lack such a track record are instead tempting users with technology innovations and peace-of-mind guarantees. Airis Corp., a Chicago-based notebook PC start-up, recently leapfrogged the higher-priced competition with an IBM Video Graphics Array-equipped unit that gains 12 hours of battery life from patented power-conserving innovations. The company was also able to price the unit about $1,000 less than its closest competitors.

Another newcomer, Wang's WLT Systems, Inc. PC Express line, tried to soothe skittish users last month by extending its free on-site service plan from one year to three. The plan is triple the length of the average PC warranty.

Some second-tier players have concentrated on pushing the technology envelope with such high-end designs as symmetric multiprocessor systems. ALR and AT&T joined Zenith and Compaq with their own multiprocessor boxes earlier this month. Once these systems ship, they will rival the power of low-end minicomputers from old-guard vendors like NCR and DEC.

But a lot of cloners seem content churning out no-frills 286 machines. There's a method to this seeming madness, however. As Compaq and NEC shift their attention away from this "antiquated" processor, low-end users may be grateful that somebody still makes what they need.

Meanwhile, clone users are walking around with a lot of spare change jingling loudly in their pockets, and my Dad is recommending used Nissans to all of his friends.

Pastore is a *Computerworld* senior writer.

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Multiprocessor extension fans Compaq fires

BY PATRICIA KEEFE
CW STAFF

SANTA CRUZ, Calif. — The recent delivery of SCO MPX, the multiprocessor extension to The Santa Cruz Operation's SCO Unix System V/386, Release 3.2 may prove to be the spark needed to fire up what some observers say are sluggish sales of Compaq Computer Corp.'s Systempro.

Compaq has shipped just 1,572 Systempros worldwide through May, according to John Dunkle, a vice-president at Workgroup Technologies, Inc., a market research group in Hampton, N.H. "We believe that to be 50% of their expectations," he said.

Sales have been stymied in part, say analysts, because a number of multiprocessor operating systems capable of exploiting the machine's hardware had not shipped. These include OS/2 Version 2.0, Novell, Inc.'s Netware/386 Version 3.2 and until recently, SCO MPX. Sources close to SCO claimed the company has booked just 300 orders for SCO MPX so far.

SCO's delivery of MPX is well timed from Compaq's point of view, given AT&T's multiprocessing server announcements made at Comdex/Spring '90.

AT&T's hardware requires AT&T's Unix System V, Release 4.0.3 in order to provide multiprocessing operations, and that version is not expected to ship until the fourth quarter. The net for Compaq is a two-quarter window of opportunity in the Unix-based multiprocessing server market.

Priced at $895, SCO MPX is based on multiprocessor technology developed by Corollary, Inc. and SCO. It also serves as a multiprocessor extension to SCO's Open Desktop graphical operating system for Intel Corp. 80386 and I486-based personal computers. MPX reportedly provides symmetric, closely coupled multiprocessing.

NEW PRODUCTS

Systems

Ogivar Technologies, Inc. has announced the Interport Station, a workstation system that can be detached to form a laptop.

The Interport Station Model SX386 uses Intel Corp.'s 20-MHz 80386SX processor, and Model 386/33E includes Intel's 33-MHz 386DX processor and an Extended Industry Standard Architecture bus.

The product supports MS-DOS, OS/2 and Unix operating systems. The Interport SX386 costs $5,395, and the Interport 386/33E sells for $6,995.

Ogivar
7200 Route Transcanadienne
Ville Saint-Laurent
Quebec, Canada H4T 1A3
(514) 737-3340

Grid Systems Corp. has introduced a notebook-size laptop computer with a removable hard disk drive.

The Grid 1810 allows users to exchange data between laptop and desktop computers by switching disk drives. Features include an 81-key, full-size keyboard, a 10-in. diagonal IBM Enhanced Graphics Adapter display with 1:1 aspect ratio and a 2,400 bit/sec. Microcom, Inc. Microcom Network Protocol modem that uses data compression to double its speed.

A standard configuration is available for $2,895.

Grid
47211 Lakeview Blvd.
Fremont, Calif. 94538
(415) 656-4700

Board-level devices

Award Software, Inc. has announced that it has incorporated Digital Research, Inc.'s read only memory-executable DR-DOS operating aystem on a plug-in card.

The new product, dubbed ROS card, enables users to upgrade their systems to a newer version of DOS. Since its operating system uses less memory, users are provided with more memory to run large applications, the vendor said. ROS card is compatible with IBM Personal Computer XT, AT, Personal System/2 and compatibles and laptops.

The suggested list price is $199.

Award Software
130 Knowles Drive
Los Gatos, Calif. 95030
(408) 370-7979

Truevision, Inc. has unveiled a single-card computer designed to transform IBM Personal Computer ATs and compatibles into desktop graphics and video systems.

Horizon860 includes a 33-MHz Intel Corp. 1860 microprocessor that reportedly performs rendering and modeling procedures 10 to 20 times faster than host systems.

Horizon860's expandable bus architecture, the Horizonbus, transfers data at 264M byte/sec. A second bus connects to an AT bus to provide communications with a host, according to the vendor.

A 4M-byte configuration is available 30 days after receipt of order for $6,295. An 8M-byte version costs $7,295.

Truevision
7340 Shadeland Station
Indianapolis, Ind. 46256
(317) 841-0332

Software utilities

Micromath Scientific Software has released an upgrade to its Graph package for scientific plotting and data transformation.

Version 2.0 of Graph features grid-line plotting, bar graph or histogram plotting, logit and probit axes and transforms for analyzing sigmoidally or normally distributed data, according to the vendor.

The product requires 640K bytes of memory, two floppy disk drives and a graphics adapter. It can run on IBM Personal Computers or compatibles with MS-DOS 3.0 or higher, the vendor said.

Single-user copies of the pro-

Continued on page 72

Mainframe Current Events

IBM Delivers CICS/ESA V3

Candle First to Support CICS/ESA

IBM Ships IMS 3.1

OMEGAMON® Supports IMS 3.1

IBM Releases VM/XA SP2.1

Candle Provides Immediate Support for VM/XA SP2.1

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Continued from page 71

gram cost $79; quantity discounts are available with site licenses.

Micromath
2034 E. Fort Union Blvd.
Salt Lake City, Utah 84121
(801) 943-0290

Interactive Systems Corp. has made Peter Norton Computing, Inc.'s suite of disk and file management tools available for users of the Interactive Unix System V/386; Release 3.2 family of Unix system software products and Intel Corp. 80386-based machines running AT&T's Unix System V/386, Release 3.2.

The Norton Utilities for System V was adapted to the Unix platform by Segue Software, Inc. and Interactive under the terms of an agreement announced in January 1989.

The product is shipping for $295.

Interactive
2401 Colorado Ave., 3rd Floor
Santa Monica, Calif. 90404
(800) 346-7111

Software applications packages

Carberry Technology, Inc. has announced CAD-Leaf, an open system software product that allows users of Interleaf, Inc.'s Interleaf Technical Publishing System to translate graphic files from one application format to another.

The product can be used to convert computer-aided design (CAD) and computer-aided engineering drawings from most CAD systems.

CAD-Leaf was designed to run on Sun Microsystems, Inc. Sun-2, -3 and -4 as well as Sun's 386I under Unix. It is shipping for $4,995 per system.

Carberry
32 Emery Road
Townsend, Mass. 01469
(508) 597-5527

Data storage

Applied Digital Data Systems, Inc.'s systems division has announced a small business computer system that incorporates a 32-bit microprocessor with 64K bytes of cache memory, 4M bytes of random-access memory and a ¼-in. cartridge tape.

Mentor 1/25 includes an Intel Corp. 80386 processor running at 25 MHz and can be equipped with a 107M- or 380M-byte hard disk drive. The system features a small computer systems interface for data transfers, according to the vendor. It was designed to accommodate up to 17 users.

The product is priced at $16,795 and is now available.

ADDS
Systems Division
100 Marcus Blvd.
Hauppauge, N.Y. 11788
(516) 231-5400

The Optimem Products Group division of Cipher Data Products, Inc. has introduced a write-once read-many (WORM) optical storage jukebox.

The Optimem 7650 Desktop Library System provides 6.5G bytes of data storage by using 10 5¼-in. double-sided optical discs in a compact desktop unit. The system employs Optimem's 650 WORM drive, which features an average seek time of 60 msec. The 654M-byte drive uses a small computer systems interface, which supports up to three daisy-chained library systems running simultaneously.

The product costs $10,995.

Optimem
297 N. Bernardo Ave.
Mountain View, Calif. 94043
(415) 961-1800

Peripherals

Key Tronic Corp. has begun shipping a keyboard that is functional with all terminal emulation software packages for MS-DOS computers.

The KB 3270 Plus was designed to work with emulation packages such as Digital Communications Associates, Inc. IRMA, IRMA/2 and IRMAX, according to the vendor.

The 122-key device features 8K bytes of keyboard random-access memory and includes software that enables users to load standard, customized scan code sets for use in microcomputer-to-mainframe environments.

The board is plug compatible with IBM Personal Computer ATs, XTs and Personal System/2s.

It is priced at $349.

Key Tronic
P.O. Box 14687
Spokane, Wash. 99214
(509) 928-8000

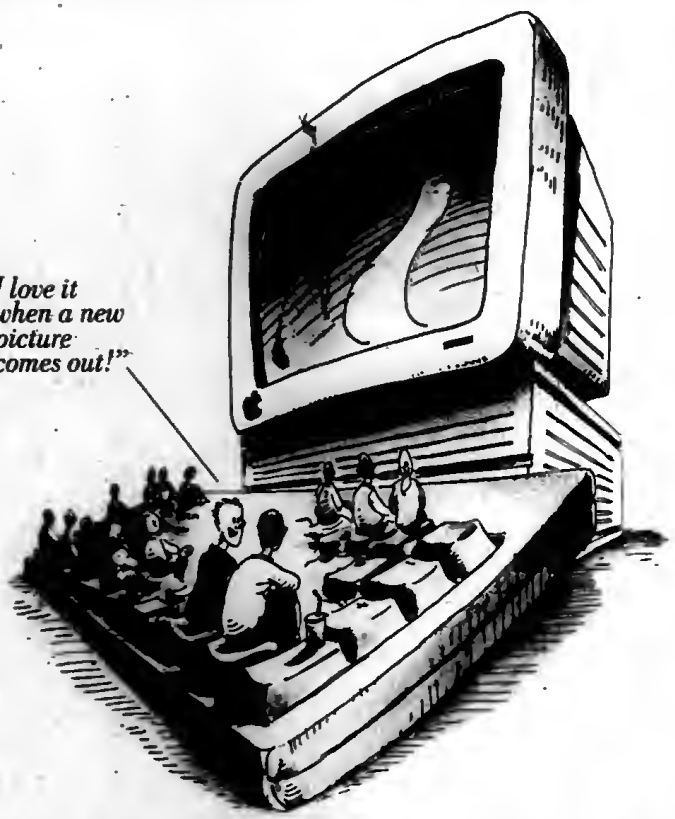
Macintosh products

Microtech International, Inc. has begun shipping 1M- and 4M-byte memory modules for Apple Computer, Inc.'s Macintosh IIFX personal computer.

The 1M-byte IIFX memory module houses 70-nsec., 1M-bit dynamic random-access memory in a one-by-nine-chip array, which is surface-mounted on a low-profile single LU line memory module (SIMM) configured with a 64-pin connector, according to the vendor. The 4M-byte IIFX modules use 4M bytes of DRAM.

A single 1M-byte IIFX SIMM costs $179, while a kit of four sells for $716. The 4M-byte IIFX SIMMs are priced at $999, and a 16M-byte upgrade kit is $3,996.

Microtech
158 Commerce St.
E. Haven, Conn. 06512
(203) 468-6223



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COMMENTARY

Jeffrey N. Fritz

Keeping PCs personal

Recent events have brought the issue of computer security to the forefront of many information systems managers and computer users' minds. We have witnessed events that make it hard to ignore the implications of inadequate computer security.

Systems previously thought to be secure, including some government systems, have become the source of some watchful concern. Reports of viruses spreading across networks such as Internet have startled many users on those networks.

Personal computers are just that — personal. PCs have become extensions of the capabilities and thoughts of the user. An invasion of a user's data is like a robbery of a person's home. It is an assault on the person. In fact, an assault mentality can be the most dangerous result of the invasion of computer sanctity. If users react by retreating into shells, the cause of computing will be set back during a time when information flow is becoming increasingly important. Interconnectivity is simply too important an asset to give up.

Life is just not as simple as it used to be. In years past, there

Continued on page 76

X terminals stung in distributed era

ANALYSIS

BY JOANIE M. WEXLER
CW STAFF

One victim of the trend toward distributed computing will be the X terminal market, analysts said, though the products will thrive in such niches as centralized companies and those striving to protect their minicomputer investments.

X terminals are intelligent devices specifically designed to run the X Window System, a networking protocol developed at MIT. X Window allows personal computers and workstations to access applications on multiple hosts and display them simultaneously in separate windows on one screen. To use the protocol, the host must be running a multitasking operating system such as Unix, VMS or MVS.

The hardware-independent X Window protocol is often used in conjunction with a graphical user interface, such as Digital Equipment Corp.'s Decwindows or Hewlett-Packard Co.'s New Wave products. X terminals have been designed as a lower cost alternative to PCs and workstations — or as an upgrade to dumb terminals — for capturing the windowing and graphical interface benefits.

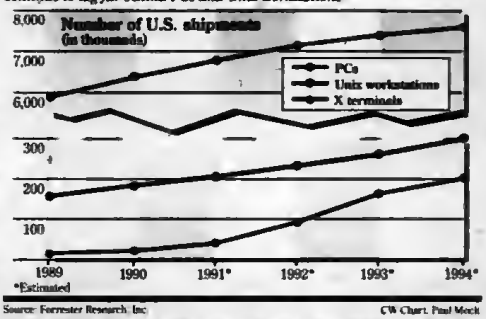
The jury is apparently still out, however, on the practicality of the terminals in today's computing environment, which is moving toward distributed rather than centralized processing at a fast pace.

"X terminals are a form of time-sharing that goes against the grain of the entire flow of computer development, which is

Continued on page 78

Miles to go

Even with steady growth expected in coming years, X terminals will continue to lag far behind PCs and Unix workstations



Source: Forrester Research, Inc. CW Chart: Paul Mock

This EDI software does Windows

BY ELLIS BOOKER
CW STAFF

DEERFIELD, Ill. — Long before windowing became popular, Foretell Corp. had decided to utilize a graphical user interface for its future electronic data interchange software products.

Believing it is the first and only EDI software vendor to use Microsoft Corp.'s Windows, Foretell and its president, Roger Mills, hope the ease of use inherent in a graphical interface will help propel the 5-year-old, $2 million software company, which claims about 1,000 users worldwide, into a larger frame.

Mills is counting on an accelerated deployment of EDI at smaller firms answering the requests of their larger trading partners to get EDI capabilities. He estimated that 70% to 80% of the EDI market is personal computer-based, with another 20% split between minicomputer and mainframe systems.

Classic user

Classic Manufacturing Co., in Cleremont, Fla., for example, began using Foretell's software last month. According to data processing manager Bob Zuckerman, Classic, which said it is the world's top plastic fishing worm supplier, was responding to meet the mid-June and early July EDI deadline set by partners Wal-Mart Stores, Inc. and K Mart Corp., respectively.

"The price was tempting," Zuckerman said about his choice of Foretell, "and I enjoy the hell out of working with Windows and the mouse."

Foretell's ESP II software translates EDI messages back and forth between a half-dozen standard formats, including the European EDIFACT standard. In addition, it offers an array of tools to manage the flow of these paperless documents among multiple EDI partners.

When Foretell first considered a graphical user interface in 1987, it planned to use Presentation Manager. But like many other Windows developers, it has pushed back its Presentation Manager timetable in light of an enhanced Microsoft Windows alternative.

A Windows Version 3.0 rendition of Foretell's ESP II product will hit the street next week.

With the multitasking features of the new Windows, Mills said, ESP II will enable the product to perform up to four functions simultaneously. In addition, it will support the Dynamic Data Exchange (DDE) feature of Windows so that other DDE-compliant applications will be available from the ESP desktop.

Moreover Mills has not abandoned his Presentation Manager strategy, noting that "it's much easier to port from 3.0 to PM."

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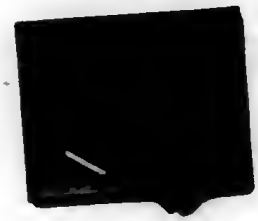

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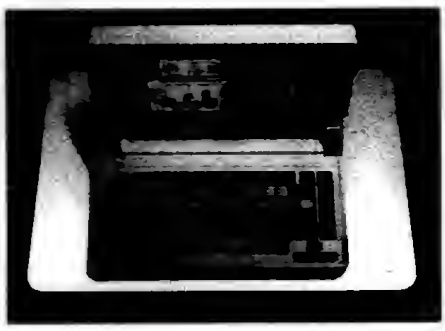

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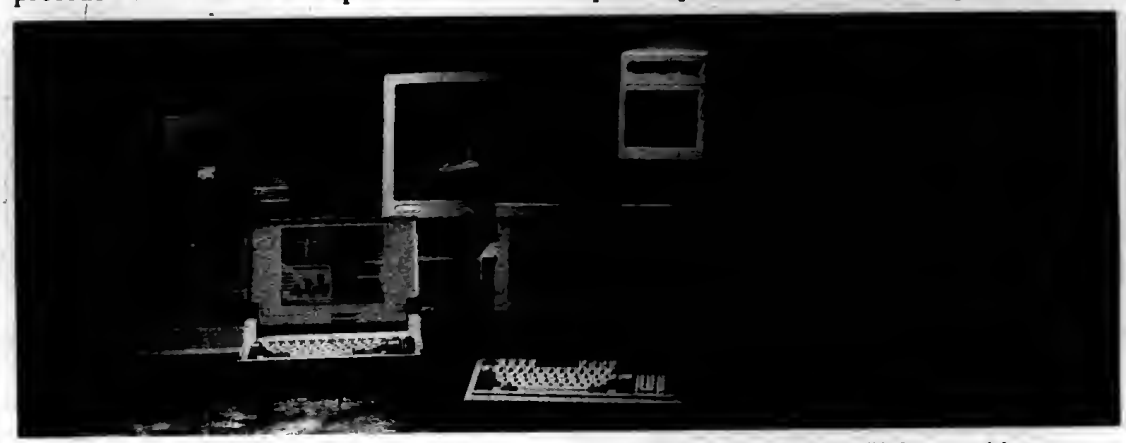

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Forging ahead on Unix frontier

Despite slings, arrows and OSF, Burlington Coat remains loyal to Unix

ON SITE

BY ELLIS BOOKER
CW STAFF

BURLINGTON, N.J. — Being a Unix pioneer can mean walking through a hail of arrows, and Michael Prince, MIS director at Burlington Coat Factory Warehouse, Inc. has had his share of nicks.

In particular, Prince and his staff continue to smart over the Open Software Foundation's (OSF) decision earlier this year to standardize on Transarc Corp.'s technology as the core of its distributed computing environment over Sun Microsystems, Inc.'s Network File System [CW, May 21]. The OSF also selected the remote procedure call (RPC) from Hewlett-Packard Co. Apollo division's Network Computing System to be part of its distributed computing environment. RPCs split an application between a client and a server.

"Initially, [the OSF decision] will lock us out of the OSF vendors," said Prince about the OSF's choice.

Prince admitted to being worried that many vendors will be forced to choose between the Sun RPC — which has been working in some Burlington retail stores for two years — and the OSF-endorsed protocol.

Nevertheless, he said he is convinced an open systems approach to networking is more flexible and that Burlington's early move to Unix has given it a competitive edge.

"Six months ago, I would have said we were almost unique in using in-store and host Unix processors," said Prince, who joined Burlington in 1983 from the computer time-sharing service that supported what were then just 32 Burlington stores.

To keep ahead of the pack, Burlington's information systems department is moving forward with a plan to replace the remainder of its in-store computers with Unix-based processors.

Prince plans to deploy five Sun workstations per week for the next 20 weeks. Already, 50 stores in the chain have the Sun processors up and running.

Burlington's in-store computers — Sun Sparcstation SLCs — will function both as communications processors linking Burlington's 154 retail outlets to a very small aperture terminal (VSAT) satellite network, and back-office processors, providing such shared functions as electronic mail and inventory processing.

Dave Bradley

Burlington's Prince *is sold on open systems*

Two years ago, when Burlington first tried the Unix architecture, it used personal computers at the registers and Sun 386I desktop computers as servers. The deployment now will use the Sparcstations and the NCR Corp. 7052D, a cash register system wrapped around the Intel Corp. 80286-based PC.

The intelligent registers and Unix processors will replace the old configuration in Burlington's stores: hosts built on 16-bit Altos Computer Systems desktop computers, running Digital Research, Inc. Concurrent DOS and connected to dumb CRT registers.

The change, according to director of store systems Cy Young, was dictated by the age of the Altos systems, and because the dumb terminals attached to them could not function if this host processor went out of commission.

"Another advantage of a Unix processor," Young said, "is it gives us direct X.25 access in and out of the box. With the Altos we had to use a [packet assembler/disassembler], and we couldn't log on to the old Altos machines remotely to diagnose problems."

Link to the outside

In-store communications between the Sun workstation and up to 50 attached registers and PCs is over an Ethernet local-area network. To connect with the outside world, the Sun is linked to the VSAT terminal at the store, which accesses the Contel ASC satellite network. This connection is through the X.25 packet data protocol.

From Contel's shared hub earthstation in Mountain View, Calif., Burlington's annual $300 million worth of credit-card checks are patched into the Visa network. At the same time, other dedicated 56K bit/sec. lines connect the earthstation to Burlington's corporate data centers in Burlington, N.J., and Lebanon, N.H.

Once all the in-store processors are replaced, Burlington will consolidate the two data and distribution centers into the Lebanon facility.

INTERNATIONAL BRIEFS

Two subscribers sign on to international ISDN network

Last month, the first two subscribers began using an international Integrated Services Digital Network (ISDN) jointly provided by **Nippon Telegraph and Telephone Corp. (NTT), Kokusai Denshin Denwa** and **France Telecom. Wagons-Lits Tourisme**, a French travel agency, is using the service for data transmission, while Canon Co. in Japan is using it for facsimile transmission. International ISDN, which provides 64K bit/sec. switched access between the French and Japanese carriers, was announced last April.

NTT reported that as of April, or two years after it announced its INS-Net ISDN service, 1,300 customers were using the 64K bit/sec. version of the service, while 140 customers were using the 1.5M bit/sec. version.

US West and **Bell Atlantic Corp.** have signed a letter of intent with Czechoslovakia's **Ministry of Posts and Telecommunications** to form a joint venture company to build a public switched packet data network. In addition, the three parties recently signed a letter of intent to construct a national cellular system and work together to modernize Czechoslovakia's telecommunications infrastructure.

Deutsche Bank and two other West German banks are implementing an estimated 1,100 **Racal-Milgo** modems as well as network support services in East Germany as part of their efforts to provide computerized support for their extended operations.

British Telecom has announced that its Servicedesk product has been integrated into its Concert integrated network management system. Servicedesk is a computer-based help desk system that coordinates responses to network service calls across a user organization. Integration with Concert ensures that details of incident reports and service requests, once logged, will be passed on via the Concert interface to the international carrier's own service operation, British Telecom said.

MCI International has signed an agreement with Belgium's telecommunications authority to offer one-stop shopping services for international leased lines between Belgium and the U.S.

Fritz

FROM PAGE 73

was not the current proliferation of local-area networks and interconnectivity that occurs between today's systems. On one hand, this has brought greater power and efficiency for users. However, this can also bring greater vulnerability. The more interconnected systems are, the higher the risk. All of this causes IS directors sleepless nights, as they wonder if someone is out there tampering with their valuable data.

So the question remains: What can be done to limit exposure to unwanted programs and unauthorized user intervention? There are some commonsense methods that can do much to protect the computer's data and the user's sanity.

- Avoid obvious passwords. Nicknames, birthdays, addresses and telephone numbers all make terrible passwords. Although they are easy to remember, they are also easily guessed. One university recently had its LAN administrative files broken into because the systems administrator chose a campus building name as a password for the administrative accounts. It didn't take an intruder long to obtain a campus map, figure out the password and gain access to critical files.
- Security must be continuously monitored and fastidiously maintained. Don't wait for a security breach to begin checking for unauthorized activity. Just as regular visits to the doctor are a part of many people's lives, computer systems must be regularly checked for unauthorized activity.
- Realize that isolation will not guarantee protection against a security breach. Avoiding shareware, bulletin boards or electronic mail is not a solution. Instead, users should carefully check all new programs with virus detection software. There have been cases in which users received viruses from shrink-wrapped commercial software packages. Even if a database service checks for viruses before posting the program, check it again anyway. In fact, the best way to check new software is to run the virus detection software from a locked floppy disk.
- Do not be lulled into a false sense of security by virus detection software. Many of these programs are well designed and regularly updated. However, we are engaged in an insidious game of chess. Those who create viruses are trying to best those who are trying to keep abreast of the virus creators. Thus, it is possible that a virus could escape detection. Watch for unusual activity on your hard drive or strange quirks in your programs. Sometimes, these are caused by a virus that escaped detection. The emphasis here is on the word "sometimes." Most computer problems are not because of viruses.
- Consider security features offered by new communications services. Incoming Calling Line Identification or calling line ID service has gotten a bad rap from the press, some state governments and misguided consumer protection groups. However, when combined with ISDN, Incoming Calling Line Identification has significant advantages for computer security. Because of ISDN's dialing protocol, the host site receives the originating telephone number of the data call. Thus, decisions can be made for access privileges based on not only password and account identification but also on originating location. Of course, an authorized location doesn't guarantee an authorized person, but at least it can be used to limit access from unapproved sites.

> DO NOT BE lulled into a false sense of security by virus detection software.

Fritz is a data communications analyst at West Virginia University in Morgantown, W. Va.

LAN tools to provide reliability at lower cost

BY ELISABETH HORWITT
CW STAFF

Along with the traditional daisies and dandelions, June was busting out all over with local-area network management introductions. This was but the latest evidence that vendors are finally responding to corporate users' increasingly urgent demands for tools to make LANs safe for mission-critical applications.

The number of users planning LAN implementations for key applications, such as database management and electronic mail, has increased as much as 10% recently, according to The Sierra Group, Inc. The Tempe, Ariz., research firm surveyed approximately 2,000 users in late 1988 and again in late 1989 about their plans for implementing applications on various platforms the following year.

Many businesses that are moving critical applications down to LANs are expressing dissatisfaction with currently available LAN management tools. Covia Corp., for example, has had to make a major investment in internal development of LAN management systems, an executive recently stated, because commercially available offerings did not provide all the necessary functionality to ensure that its token-ring-based networks would support mission-critical applications.

The latest crop of LAN diagnostics announcements addresses two emerging market demands: for lower cost tools and for tools that can work with the latest LAN .protocols, such as 10M bit/sec. twisted-pair Ethernet. The following fall into the low-cost category:

• Neon Software, Inc., based in Lafayette, Calif., introduced Netminder, a $495 software package that is said to capture, display and analyze data packets traveling over an Ethernet LAN. The Apple Computer, Inc. Macintosh II software is said to measure the amounts of traffic on individual Ethernet nodes or segments and to collect packets generated by Appletalk, Internet and Xerox Network Systems protocols.

• Digilog, Inc. in Montgomeryville, Pa., introduced Lanvista 100, which it calls the first "full-function" protocol analyzer priced at less than $3,500. Based on Microsoft Corp. Windows, the system is said to capture and decode all seven layers of a wide variety of protocols, displaying frame size, source and destination address and error indications.

• Tektronix/LP Com in Mountain View, Calif., introduced a variety of network administration products, including a "low-cost" ($1,490) Ethernet Probe that is said to continuously monitor traffic on a local or remote LAN segment. Also announced was network management software that is said to convert a personal computer running Windows 286 into a centralized monitoring and control system for distributed Ethernet networks. The $1,850 price tag includes software and an Ethernet controller card.

Also introduced were the following tools that were designed to work outside the Ethernet/token-ring mainstream:

• Computrol, Inc. in Ridgefield, Conn., announced Isocomm Network Monitor, which is said to monitor traffic on a Manufacturing Automation Protocol (MAP) 3.0 network. The Windows-based product is said to display LAN traffic statistics and a map of nodes. It supports carrier band, broadband or fiber-optic MAP media and any MAP 3.0-compatible network controller, Computrol said.

• David Systems, Inc. in Sunnyvale, Calif., announced the David Pair Scanner, a handheld instrument for diagnosing and troubleshooting faults on coaxial and twisted-pair cabling systems. The product is said to monitor and log activity on a IEEE 802.3 network, including 10M bit/sec. twisted-pair LANs based on the 10Base-T standard. It is priced at $2,495.

Tandem opts for open systems

Tandem Computers, Inc. last week announced enhancements to three networking products designed to allow the company's proprietary operating system-based computers to accommodate more standardized protocols.

Tandem's OSI Applications Services development product offers compatibility with the Open Systems Interconnect (OSI) model up to the seventh, and highest, layer. Last year, the company offered a product only up to Layer 5, according to Tandem spokesman Jim Lewis.

"It allows implementation of networking applications without knowledge of the underlying protocols," Lewis said. He added that it allows a manager to invest in people who are not vendor-specific in their programming expertise.

Also announced were enhancements to the company's SNAX line of IBM communications products and its Transmission Control Protocol/Internet Protocol (TCP/IP) package. SNAX now has wide-area network X.25 capability. Its TCP/IP product includes X.25 capability as well as a mail gateway and network administration software that gives a monitor the location of mainframe devices.

The beauty of a fiber optic network depends on what you run the light through.

Recently, a lot of high-performance network people have put their faith in fiber optics.

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X terminals

CONTINUED FROM PAGE 73

to deliver more power and function to the desktop," said William Bluestein, an analyst at Forrester Research, Inc., a Cambridge, Mass.-based consulting firm.

Forrester's predictions for X terminal popularity are significantly less bullish than those of consultancy X Business Group and market researcher International Data Corp. (IDC), both of which projected 1990 worldwide X terminal shipments of 68,000 (see chart page 73). IDC predicted U.S. shipments of 42,000 in 1990, compared with Forrester's 18,000.

X terminals are subject to the same limitations as traditional terminals — unreliable response time because of network bottlenecks to the host and the inability to process applications at the desktop. They also offer traditional terminal benefits, such as giving the information services department greater control and security of resources, which are stored in a central repository rather than distributed all over the company. They also protect investments in large-CPU computing power.

In addition, X terminals generally offer higher resolution screens than either dumb terminals or PCs, which enhances the graphics functionality.

Stephen Auditore, president of Fremont, Calif.-based X Business Group, explained that "if you have excess CPU power, memory and network capacity, and your application is not compute-intensive, X terminals make sense. If you require a lot of horsepower, they are problematic."

Cost advantages to X terminals are murky, particularly in light of plummeting workstation prices. For example, Sun Microsystems, Inc. recently unveiled its under-$5,000 diskless Sparcstation SCL, which sells for $1,000 less when purchased in quantities of 20 or more along with a Sparcserver 490, according to Sun. In contrast, X terminal prices range from about $2,000 to $3,000, but they sacrifice functionality for the savings.

"We've been evaluating the new diskless Sun Sparcstation against X terminals," said Gerald Siddons, director of scientific computing for the division of biostatistics and epidemiology at Boston's Dana Farber Cancer Institute. Siddons said he has been experimenting with one Network Computing Devices, Inc. X terminal for about a year and also has a DEC VT-1000 terminal, which he said "arrives brain-dead" with only 1M byte of memory.

The DEC terminal "has been gathering dust for months" waiting for a memory upgrade, he said, with such needed upgrades rendering the workstation/terminal costs more competitive.

The computer services director of a large New York financial institution added, "It doesn't pay for us to invest in X terminals because of their limited function. If we use PCs and workstations to run X [Window System], we can also use them for other tasks."

Who will survive?

Analysts agree that shakeout is inevitable in the X terminal market. Stephen Auditore, president of X Business Group in Fremont, Calif., said there are at least 23 X terminal manufacturers worldwide today.

"That's an awful lot for shipping under 70,000 units this year," he said.

Vendors are moving to differentiate themselves. For example, Network Computing Devices, Inc. recently announced that its terminals will support the Simple Network Management Protocol, a de facto standard for managing Transmission Control Protocol/Internet Protocol networks, which often are Unix-based.

Systems supplier NCR Corp., which recently entered the X terminal business, has taken pains to bundle a version of the Open Software Foundation's Motif graphical user interface into its products.

Auditore said that vendors well positioned to offer color terminals — which currently include Hewlett-Packard Co., Network Computing Devices, NCR and IBM — will likely be survivors of the X terminal business, in that demand for color display stations are expected to account for nearly 35% of 1990 shipments worldwide.

Another possible edge for vendors would be offering a broad product line with various screen sizes, performance and color/monochrome offerings to accommodate users with different needs within one company.

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MICROGATE CORPORATION

NEW PRODUCTS

Host-to-host

Wang Laboratories, Inc. has enhanced its Information Distribution System (IDS) family of software products for information sharing between IBM mainframes and Wang VS computers.

IDS Release 3.0 supports IBM Systems Network Architecture communications over X.25 tranports as well as IBM Synchronous Data Link Control.

The enhanced IDS offerings include Store and Forward, Host Delivery Services and Host File Access Facility, which are priced at $11,000 for all three products; Host-to-Host Transport ($2,200); Standard Components ($11,000); and VS IDS Transport ($500).

Wang
One Industrial Ave.
Lowell, Mass. 01851
(508) 459-5000

Gateways/Bridges/Routers

Promptus Communications, Inc. has introduced a product that combines local-area network bridging and routing with voice/data multiplexing on IBM Personal Computer AT platforms.

Promptus T1 Commserver+ operates over fractional or full T1, switched 56 and European E1 digital services. It can be migrated to services based on Primary Rate Interface Integrated Services Digital Networks and can interconnect Novell, Inc. Netware LANs.

The product is scheduled to begin shipping in the second quarter for $7,000.

Promptus
207 Highpoint Ave.
Portsmouth, R.I. 02871
(401) 683-6100

Clearpoint Research Corp. has announced the CMB-1000, a reduced instruction set computing-based intelligent multiport bridge.

The device provides forwarding rates of 50,000 packet/sec. and offers address filtering, network monitoring and support for the Spanning Tree Algorithm.

A minimum configuration includes one Ethernet port, one wide-area network port, a Starwatch network management software package and full Spanning Tree support. The basic system costs $7,500. A fully configured version, with eight Ethernet ports and three WAN connections, costs $18,500.

Clearpoint
35 Parkwood Drive
Hopkinton, Mass. 01748
(508) 435-2000

Wellfleet Communications, Inc. has announced routing support for two new protocols: Novell, Inc.'s Integrated Packet Exchange Protocol (IPX) and Xerox Network Systems' Internet Transport Protocol (XNS).

The XNS/IPX software is being offered with Transmission Control Protocol/Internet Protocol, Decnet and Spanning Tree Bridge software already supported by other Wellfleet multiprotocol routers and bridges.

The price is $1,000 per protocol.

Wellfleet
12 DeAngelo Drive
Bedford, Mass. 01730
(617) 275-2400

Links

Idea has unveiled a network controller that can support multihost communications in IBM mainframes, midranges or Digital Equipment Corp. VAX computers.

The Concert Controller can be configured as an IBM 3174- or 5394-compatible control unit, and its modular architecture is not strictly configured for any particular host or environment, the vendor said.

The product is available in three models — the Idea Concert 10300, 10400 and 10500 — for token-ring, remote or local environments. Pricing ranges from $2,000 to $12,495, depending on configuration.

Idea
1515 W. 14th St.
Tempe, Ariz. 85281
(602) 894-7000

MANAGER'S JOURNAL

EXECUTIVE TRACK

Richard Chow was named to the newly created position of vice-president of MIS at **Pyramid Technology Corp.** He supports all the IS and communications needs of Pyramid, a Mountain View, Calif.-based manufacturer of Unix-based file servers.

Chow, 42, was most recently director of MIS and corporate communications at Wyse Technology. Previously, he founded and served as president at Exante Software and was manager of financial systems and services at National Semiconductor Corp.

Chow has a B.A. in electrical engineering from Stevens Institute of Technology and an MBA from the University of Denver.

Thomas DaRos was promoted to vice-president of systems and data processing at **Webcraft Games**, a division of Webcraft Technologies, Inc., a maker of instant lottery tickets and systems in North Brunswick, N.J.

DaRos is responsible for all computer systems used in the design, production and delivery of lottery tickets. He was previously director of electronic data processing at Webcraft.

Before joining the firm, DaRos was vice-president and regional manager of Software Products, Inc., a consulting firm in Washington, D.C. Other positions he has held include vice-president of administration at Agora Industries and director of MIS at Todd Logistics, Ind.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

Miles to go before he sleeps

Alamo Rent A Car's Tom Loane drives his group by keeping his eyes on the business

BY ROSEMARY HAMILTON
CW STAFF

PROFILE: Tom Loane

Ken Touchton

Position: *Vice-president of computer/communications services, Alamo Rent A Car, Inc.*
Mission: *To improve Alamo's bottom line*

As the newly appointed head of information systems at Alamo Rent A Car, Inc. in the mid-1980s, Tom Loane saw something he did not like. Staff members were showing up at meetings "whenever they felt like getting started."

So Loane instituted a policy that cost staffers a dollar for each minute they were late. Meetings were soon starting right on schedule, and the policy was discontinued.

"Like anything else," Loane says, "it's good for a while, and then you get to the point where you stop. It achieved its objective."

In managing IS at Fort Lauderdale, Fla.-based Alamo, Loane is apparently fond of this approach. He assesses a situation, comes up with a plan for it, implements it and moves on. He presents himself as a no-nonsense kind of guy who seems to have no time for schmoozing or gratuitous remarks. He speaks frankly and is willing to take actions that will not be popular with others. Yet, he is a gracious boss who treats his staff with respect and believes in their abilities, according to IS department managers. For instance, Loane, vice-president of computer and communications services, refers to his staff as the people who work *with* him, not *for* him.

Director of operations Andy Fay says Loane will not hesitate to tell a vendor what he thinks of them. "It's almost embarrassing," Fay says.

However, Fay also says Loane likes to join the staff when they get together socially every few months. Alamo recently moved its data center to another Fort Lauderdale location, and the job of hauling the equipment fell to Fay's staff. Loane "bought T-shirts for the moving team. He likes doing things like that to keep spirits up," Fay says.

Full speed ahead

Loane brings a focus to his job that is almost single-minded. He is quite taken with the car rental business and spent one hour in a recent interview talking about rental trends and the competitive situation before discussing IS.

Alamo ranks fifth in the U.S. car rental business behind The Hertz Corp., Avis Rent-A-Car Systems, Inc., National Car Rental and Budget Rent-A-Car Corp., according to industry estimates. Unlike most of its competitors, it has remained independently owned and stayed focused on a small number of high-volume locations.

Alamo shows the typically feisty personality of the little guy in the market. It makes no bones about being behind powerful competitors, but it is determined to whip them where it can.

To that end, Loane says his mission as IS chief is to help Alamo make more

Continued on page 80

Teaching systems pride to line managers

BY CLINTON WILDER
CW STAFF

Forget Max Hopper. If you're looking for a role model in information systems leadership, set your sights on Horace Mann — America's greatest educator.

The ability to educate senior and line management on IS is the newest critical success factor for the 1990s, according to the man who made critical success factors famous, Jack Rockart of MIT. Rockart closed out the MIT Center for Information Systems Research (CISR) summer seminar in Cambridge, Mass., last month by exhorting IS directors to change the way they view their jobs.

Specifically, Rockart said that chief executives and line managers must feel that systems are *their* systems. "The success or failure of information technology in an organization depends on the line manager," he said. "Therefore, IS needs to educate."

He cited the example of Ray Cairns, who heads IS at Du Pont Co. In the mid-1980s, Cairns set up three different educational programs on the basics and potential of IS — one for midlevel managers, one for a level below the top and one for the most senior executives. "Du Pont today has more programs changing the way they do business than most organizations in the world," Rockart said.

MIT's Rockart *advocates education*

He urged IS executives to form coalitions and establish formal briefings but noted that "lunch and chance meetings in the hallway" are often even more effective in promoting the IS cause.

The educational section of the job, Rockart added, is part of the IS executive's evolution from manager to leader — one who sees new ways, enabled by IS, for the company to do business. He cited Cairns, United Technologies Corp.'s John Hammitt and Procter & Gamble Co.'s Robert Herbold as IS heads who have adopted this new role.

"They see their role as urging and aiding innovation," he said.

Rockart noted that the CISR session is a perfect spot for IS leaders to practice their new part. "Don't come back next year," he said. "Send someone else in your organization."

Back to school at Alamo

Tom Loane is one IS director who doesn't just talk about knowing the business his company is in; he lives it.

Loane says he owes this in part to Alamo, which has a far-reaching educational policy for all IS staffers, including the boss.

On the first day Loane went to work for Alamo, he was instructed to report to the rental station in Fort Lauderdale, Fla. He worked there for one month before gracing the headquarters offices of IS.

"I prepped cars for rental, I scraped stickers, I washed cars," Loane recalls. "Car washing — that was the primo job there."

IS staffers get classroom time on the car-rental industry, and Loane teaches many of them now. They also work in the rental stations so they get a feel for the business they are in.

"The standard management training puts them through a less strenuous cycle [than Loane's own training], but one of the most important things is to know the business," Loane says.

It apparently won him over. When asked what job he'd like if he became tired of his current one, Loane said he would enjoy managing a rental station.

"I don't ever expect to get bored, but if I did, I'd like to try that," Loane says. "I have a great deal of respect for the people who are doing that every day."

He also says he has no aspirations to climb the Alamo corporate ladder and would not want the job of chief executive officer.

"I have too much fun doing things, and I really don't think I want to be a front-person of an organization," he says. "I'd rather not be in the spokesman role. There's more fun to doing things than talking about them."

While he doesn't say that he would turn down IS opportunities at other companies, he states unequivocally that "it would be very, very unusual to find a better job opportunity."

ROSEMARY HAMILTON

Alamo

FROM PAGE 79

money — period.

"If technology solves the problem, good. If not, fine," Loane says. "This is not about being showy. Does Alamo want to have a pretty DP center or better cars?"

As a result, Loane seems uninterested in discussing technology that is not directly tied to Alamo. He dismisses the recent trend in computer-aided software engineering, claiming that it "tends to replicate what the current systems do." His shop is almost exclusively Cobol.

On the other hand, Alamo recently launched an imaging-based billing system that will send statements to customers with images of their rental slips instead of mailing out packets of individual slips. "We are creative with what our systems do, but we are not trying to be fashionable in IS," he says.

Loane says he believes his job is to create an atmosphere where his staffers can excel and develop competitive systems, such as Alamo's critical on-line reservation system. He works to keep the environment open and upbeat, encouraging staffers to take risks. People do not get fired for making mistakes, he says: They get canned for not trying.

Since Loane speaks frankly, he expects his staffers to speak their minds as well. He trusts their capabilities, saying he has surrounded himself with "incredibly talented people." He

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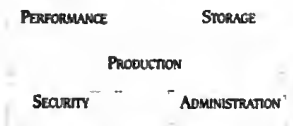

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displays a positive attitude, claiming to have "the best job in the world," and expects his staff to be similarly upbeat.

Luis Arana, an IS director of software development, recalls a recent confrontation with Loane over a software project. Arana believed it was not working and told top management that the project had not been a success.

Loane did not like that negative attitude one bit, Arana says.

"Tom was very, very upset with me, even angry," Arana says. "I tried to convince him that what I had done was right. After a while, he calmed down. He didn't come over to my side 100%, but he sort of agreed with me, and he gave me the project to do over again. We did it, and it worked. He wasn't afraid to try it again, even though I had gotten up in front of everyone and said it didn't work."

Loane joined Alamo six years ago after a short stint as an IS consultant at audit firm Ernst & Whinney (now Ernst & Young) in Miami. Alamo recruited him when its IS manager moved to the marketing department, and Loane jumped at the chance to be the lead IS person. "I would be hard-pressed to find an opportunity as good as the one I have," Loane says.

Loane's upbeat attitude apparently goes way back. In 1960, while a high school sophomore in Baltimore, Loane built a small computer and entered it in the local science fair. First place just escaped him, however, when his machine caught fire. He won second place honors, instead. The mishap apparently did not discourage him but instead helped him decide what his career would be.

"1960 was a good year to get interested in computers," he says. "I'm one of those really strange people who was fortunate to find something I like and stayed with it."

Loane went to Cornell University and majored in engineering, then immediately followed that up with an MBA from Cornell in 1968. He worked briefly for a small textile manufacturer in Pennsylvania before joining Electronic Data Systems Corp. He worked there for 10 years as a project leader for various clients in the health care, banking and transportation industries before giving the Ernst & Whinney consulting job a shot.

However, the job soon lost its charm, Loane says, because prospective clients had more branch offices than corporate headquarters in the Miami area. These offices either did not have decision-making authority or did not need consulting services.

Nonetheless, he calls that job a good experience as well. Loane suggests that convincing yourself that you have a positive situation is half the battle. "I've lived in a lot of places, and every place has been the best place at that time, just as each job has been the best job," Loane says. "I really think this. But there's a little bit of psychology involved."

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MANAGEMENT BRIEFS

Andersen fills three posts

Andersen Consulting announced three appointments last week in its Change Management Services practice.

Carla Paonessa was named managing director of organization change. Based in Andersen's Chicago headquarters, Paonessa, 43, joined Andersen in 1978. Before that, she spent 12 years directing personal development programs at the U.S. Internal Revenue Service and Federal Aviation Administration.

James Caldwell was named managing director of knowledge transfer. He directs Andersen's Change Management Services practice in the Southwest from the Dallas office. Caldwell, 49, has a background in computer-based training and taught accounting at Texas Tech University before joining Andersen in 1979.

Carlos Cervantes was named managing director of technology assimilation. Based in Atlanta, Cervantes, 49, is the division head for service industries. He has worked for Andersen since 1965 in Sao Paulo, Brazil; San Juan, Puerto Rico; Bogota, Colombia; Chicago; and Detroit.

CLIPS

Tim Lewis

Summaries from leading scientific and management journals

"What leaders really do"

By John P. Kotter

Harvard Business Review
Summer 1990

■ "Lead, and they shall follow" is not as simple as it sounds. In today's businesses, leaders are not necessarily the managers, and managers are not necessarily the leaders. This is because leadership and management are two distinct but complementary systems of action. Both are necessary for survival and progress in today's changing corporate world.

So how does a manager incorporate leadership abilities to balance his role? A good way to start is to recognize the fundamental differences in approaches:

- Management is about coping with complexity; leadership is about coping with change.
- Management deals with planning and budgeting; leadership deals with setting a direction.
- Management achieves its plan by organizing and staffing; leadership achieves its plan by aligning people — that is, communicating the new direction to those who can create coalitions that understand the vision.
- Management ensures plan accomplishment by controlling and problem-solving; leadership ensures the same by motivating and inspiring others.

Managers must realize, however, that the main challenge is to have both leadership and management skills.

Notable leaders/managers include Lou Gerstner at American Express Travel Related Services, whose direction for the division helped increase its net income 500% from 1978 to 1987; Chuck Trowbridge and Bob Crandall at Eastman Kodak Co., whose alignment of people helped quality on a main product line increase one hundredfold between 1984, and 1988; and Richard Nicolosi at Procter & Gamble Co., whose emphasis on teamwork and multiple leadership roles pushed paper products division revenue up 40% and profits 66%.

"Issues for the successful information center"

By Ron G. Thorn, Jan L. Guynes and C. Stephen Guynes

Journal of Information Systems Management
Spring 1990

■ The information center — a corporate resource for personal computer training, applications backlog reduction and, sometimes, an entity created to ease user dissatisfaction with the IS department — can only be successful if it can generate user satisfaction with the system and its associated personnel. Lacking an effective plan to create the center is a recipe for failure.

To plan and implement a successful information center, one must assess the organization's mission and objectives; determine whether an information center can support that mission (an organization dedicated to strong centralized control of IS will probably not profit from an information center); maintain a user-oriented identification for the center; and develop a charter for it.

Other tips: Sell the concept to senior management; sell the concept to selected users; and design the information center as a business within a business (the attitude that the center must generate more value than it costs is critical).

"Systems development risks in strategic information systems"

By Chris F. Kemerer and Glenn L. Sosa

MIT Sloan School of Management Center for Information Systems Research
May 1990 Working paper

■ There has been a steady stream of one-sided articles about successful strategic information systems, but very few have addressed the significant risk that such a project will be a failure.

The risk of failure is intensified because strategic systems are very expensive, complex to develop and sometimes employ "bleeding-edge" technology.

A classic example of a failed strategic system is Federal Express Corp.'s Zapmail facsimile service, launched in July 1984. After losing about $350 million, Zapmail was terminated in March 1986 because the market failed to develop.

On the front end, it may be difficult to launch a strategic system unless there is an active partnership between the IS department and line managers and tolerance of experimentation and minor mistakes. On the back end, strategic systems are expensive to maintain and/or enhance — and there is always the risk that the system can be copied by rivals.

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COMMENTARY

Ellis Booker

Test the water before you dive

Only a year ago, Eastman Kodak dove into the bracing outsourcing waters. Today, the hot summer of 1990 finds the beach crowded, with dozens of companies in the surf. Many more users are sitting on the sand, watching and waiting for the right proposal to float by.

Last month in St. Louis, some experienced outsourcing swimmers gathered at a day-long seminar to talk about the advantages and pitfalls of handing a company's information systems operation to an outsider.

By far, the consensus at this seminar was that the economic and strategic success of the outsourcing falls most heavily on the user. Most of the best ideas from "Outsourcing: Strategies for the '90s," sponsored by Washington University's Center for the Study of Data Processing, centered around that point.

The group said again and again that to evaluate and then enter into an outsourcing arrangement, the best approach involves careful planning, evaluation and introspection.

This last item, introspection, is one that doesn't get enough attention — whether the subject is outsourcing or business practices in general. The institutional inertia that grips businesses that employ more than five people is well known and oft-bemoaned.

In fact, I suspect that more than a few savvy managers have seized on the outsourcing concept because it provides exactly the right sort of incentive to take a long, hard look inward at an IS operation that hasn't been placed under the spotlight in years.

Consider the case of Peabody Holding Co., a $1.8 billion oil concern, which since 1985 has conducted frequent reviews of its entire technology operation, from systems software to long-distance service.

"We select vendors to come in and do an analysis on our costs, schedules and plans," Vice-President of Information Services Richard J. Price says.

Price proudly reports that the IS department, which has held its annual budget at $9 million for a number of years, has yet to find an outsourcing vendor with a better deal. "They tell us our cost of operation is significantly less than their cost," Price says.

A bloated IS operation should not be compared with an outsourcing alternative, said Donald T. Winski, executive director of corporate information services at Time Warner, Inc. "You want to start with the *minimum* IS requirement," he says.

Winski recommends the following exercise. Consider what IS functions you would give to an outsourcer if your computer and storage capacity were infinite and your costs were zero.

This kind of thinking, he suggests, will create a "paradigm shift," allowing one to think about how to bring new abilities into the business, as well as cost savings.

On the subject of costs, Michael J. Intille, vice-president of TSC, a Chicago-based consulting firm, offers the following sound advice: Understand the economic underpinnings of your IS department's costs — broken down into capital and variable expenses as well as costs per transaction — before comparing it with the outsourcer's proposal. That proposal, obviously, must also contain a price-per-transaction field.

Interestingly, while a number of the presenters made a compelling case for the economic advantages of outsourcing, this was not their fundamental measure of the success of their arrangements. Rather, most judged it on the basis of the long-term strategic advantages, such as keeping current with technology or — for those who outsource programming development along with hardware — keeping current with the skill level of the industry.

Introspection, especially on the beach in the summer, is important. Without it, you almost always get burned.

Booker is *Computerworld's* Chicago bureau chief.

IIE winners announced

SAN FRANCISCO — Ford Motor Co. and Mountain Fuel Supply Co. were recently named winners of the 1990 Institute of Industrial Engineers (IIE) Award for Excellence in Productivity Improvement. The companies were honored at the IIE's conference here.

Ford won in the manufacturing category for effectively changing its corporate culture to focus on continuous improvement of products and services.

Salt Lake City-based Mountain Fuel, a natural gas distribution subsidiary of Questar Corp., used industrial engineering tools, training and a personal computer-based application to increase the number of customers served per employee by more than 30%. It won in the service category.

To find out how easy it is to convert DCA's new IRMA from standard to MCA bus, flip the page.

CALENDAR

"Managing Information Resources in the '90s: A Fresh Start" will be the theme of the upcoming National Association of State Information Resource Executives' 22nd annual meeting in Princeton, N.J.

The meeting, to be held Aug. 6-9, will address changes in the way technology is being used and managed in government. Individual session topics include executive information systems, ethics in technology, outsourcing, computer security, technology trends and a tour of the AT&T Network Operations Center.

For more information, contact NASIRE staff director Louise Spieler at (606) 231-1870.

JULY 15-21

Association of College and University Telecommunications Administrators Annual Conference and Exhibit. Orlando, Fla., July 15-19 — Contact: Lisa McLemore, ACUTA, Lexington, Ky. (606) 252-2882.

IDN in the International Marketplace. San Francisco, July 16-18 — Contact: International Congress Registrar, Alexandria, Va. (703) 838-8042.

Industrial and Engineering Applications of Artificial Intelligence and Expert Systems. Charleston, S.C., July 16-19 — Contact: Dr. Moonis Ali, University of Tennessee Space Institute, Tullahoma, Tenn. (615) 455-0631.

Database World Conference & Exposition. Santa Clara, Calif., July 17-19 — Contact: Digital Consulting, Andover, Mass. (508) 470-3870.

Macintosh/New York Conference & Exposition. New York, July 17-19 — Contact: Exposition Management, Waltham, Mass. (617) 290-0400.

Data Processing Disaster Recovery Plan. San Diego, July 17-20 — Contact: Harris Devin Associates, Wayne, Pa. (215) 341-8854.

JULY 22-28

Guide 77 Convention of Midsize and Large-Scale IBM Systems Users Group. Chicago, July 22-27 — Contact: Guide International, Chicago, Ill. (312) 644-6610.

The CAMMP Show for Computer-Aided Graphics, Multimedia and Presentations. Chicago, July 23-27 — Contact: Debbie Rotolo, Knowledge Industry Publications, White Plains, N.Y. (914) 328-9157.

Multi-Net Expo '90. Houston, July 25-26 — Contact: Ann Garner, Multi-Net Expo, Houston, Texas (713) 827-8030.

Utah State University IT Institute. Logan, Utah, July 25-28 — Contact: Monque Squire, Logan, Utah (801) 750-1690.

Directions and Implications of Advanced Computing Symposium. Cambridge, Mass., July 28 — Contact: Coralee Whitcomb, DIAC, Cambridge, Mass. (617) 891-3103 or (508) 945-0360.

JULY 29-AUG. 4

AI-1990 Conference. Boston, July 29-Aug. 3 — Contact: American Association for Artificial Intelligence, Menlo Park, Calif. (415) 328-3123.

Workshop on Electronic Information Exchange Standards Used in Document Processing Applications. Gaithersburg, Md., July 30 — Contact: Lori Phillips, NIST, Gaithersburg, Md. (301) 975-3881.

Insourcing vs. Outsourcing: The Summit Meeting. Atlantic City, July 31-Aug. 1 — Contact: The Yankee Group, Boston, Mass. (617) 367-1000.

Delaware Valley DB2-SQL/DS Users Group Meeting. Essington, Pa., Aug. 1 — Contact: Jean Tucker, Scott Paper, Philadelphia, Pa. (215) 522-6294.

Computer Security in the '90s Conference and Exposition. Atlanta, Aug. 1-3 — Contact: Inforum, Atlanta, Ga. (800) 343-5048.

Object-Oriented Design and Programming seminar. Montreal, Aug. 2-3 — Contact: Darcy Harrison, Interactive Software Engineering, Goleta, Calif. (805) 685-1006.

AUG. 5-11

Uniforum Open Systems Seminar. Chicago, Aug. 6 — Contact: Uniforum, Santa Clara, Calif. (408) 986-8840.

North American ISDN Users' Forum. Gaithersburg, Md., Aug. 6-9 — Contact: Lori Phillips, NIST, Gaithersburg, Md. (301) 975-2937.

Siggraph '90. Dallas, Aug. 8-10 — Contact: Siggraph '90, Chicago, Ill. (312) 644-6610.

AUG. 12-18

The Urban and Regional Information Systems Association. Edmonton, Alberta, Aug. 12-16 — Contact: URISA, Washington, D.C. (202) 289-1685.

SHARE 75. New Orleans, Aug. 12-17 — Contact: SHARE headquarters, Chicago, Ill. (312) 644-6610.

Downsizing Conference: Moving from Mainframes to PCs. Boston, Aug. 13-14 — Contact: Digital Consulting, Andover, Mass. (508) 470-3880.

AUG. 19-25

Eastern Regional ISSA Conference. Washington, D.C., Aug. 19-21 — Contact: Ralph S. Poore, Baltimore, Md. (301) 783-3865.

Strategic Information Systems Conference. Boston, Aug. 20-21 — Contact: University Seminar Center, Boston, Mass. (617) 248-8066.

Summer Workshops for the Information Processing Professional. Nashua, N.H., Aug. 20-23 — Contact: Ouellette & Associates, Bedford, N.H. (603) 623-7373.

SCO Forum '90. Santa Cruz, Calif., Aug. 20-24 — Contact: The Santa Cruz Operation, Santa Cruz, Calif. (408) 425-7222.

Early, Cloud & Co.'s Summer Conference on Telecommunications. Newport, R.I., Aug. 22-23 — Contact: Early, Cloud & Co., Newport, R.I. (800) 322-3042.

AUG. 26-SEPT. 1

National Computer Graphics Association Conference and Exposition. Houston, Aug. 26-29 — Contact: NCGA, Fairfax, Va. (703) 698-9600.

CASE for the 1990s. Boston, Aug. 27-29 — Contact: Extended Intelligence, Chicago, Ill. (312) 346-7090.

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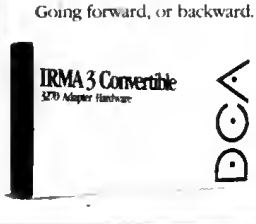

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Keep risks in sight when walking the edge

BY BARBARA FRANCETT

Three years ago, David Carlson, senior vice-president of corporate information systems at K Mart Corp., made his pitch to the company's senior management for an advanced satellite network to link 2,250 stores. The expected outlay was $40 million to $50 million. Carlson says he remembers the day and the dialogue very well. It went something like this:

Top executive: "How proven is the technology?"

Carlson: "Not at all."

Top executive: "Who else is using it?"

Carlson: "No one you know."

Top executive: "How much experience does the staff have with it?"

Carlson: "None."

Hardly a promising beginning, but as it turns out, K Mart did sign an agreement for the satellite network with GTE Spacenet. It was the largest commitment to a new technology that K Mart had ever made. Today, the network links 1,900 K Mart stores to the corporate headquarters in Troy, Mich., with about 350 more stores to go.

Projects that use advanced technologies can be risky business, but, as Carlson's experience shows, risky projects can be sold, and the risks can be managed.

It certainly helped that Carlson was dealing with company management predisposed to listen, without prejudice, to unproven ideas. "They are very open to the technology," Carlson says. "They allow risk-taking to occur." Still, it would be a mistake to assume that K Mart was willing to take a step this large without solid information or safeguards.

Although he couldn't show precedents, Carlson could and did produce some very specific supporting arguments. "We anticipated objections and were prepared to answer them," Carlson says.

Peter Yates

K Mart's Carlson *recommends conducting careful research and hiring good lawyers*

The informations systems department, he explains, had tracked and assessed the technology very carefully before bringing up the idea. "We had taken a serious look and determined that the system's technology, VSAT [very small-aperture terminal] and Ku-band [frequency for satellite communication], was superior to that of a terrestrial system," Carlson says.

There was also plenty to say in terms of business justification. On-line credit authorization via the satellite network would produce enough savings to cover investments. Business analyses would be improved with a network that made overnight transmission of store sales data to headquarters feasible. Finally, the ability to transmit management updates and merchandise reviews in video format would promote corporate unity.

The experiment was also hedged with technical and legal safeguards. The vendor was one in which the company could have confidence, Carlson says. And K Mart subjected the technology to trial by fire, first piloting the satellite network in 50 stores — half in Michigan and half in Florida. "Ku-band is influenced by rainstorms. We wanted to see how the network would function under the most rigorous conditions," Carlson says.

If things didn't work, the company's contract attorneys had made sure that there were escape hatches. "If the technology didn't work, we had recourse," Carlson says. "We felt great comfort in the safety net of the contractual relationship."

Knowing how to manage the risks is now more important than ever before, because playing it safe — only choosing the technologically tried and true — is simply not an option anymore for many companies. Today's complex, volatile business environment mandates increased risk-taking.

Armed with knowledge

The technologically adventurous can sweep the competition if they confront risk with knowledge. "If a technology is very high-risk and expensive, it can create a barrier to entry for your competitors," says Thornton May, director of imaging research at Nolan Norton Institute in Lexington, Mass. "But you must understand your business and be proactive."

The demands of a new product inspired Dow Jones & Co. in South Brunswick, N.J., to undertake a parallel processing project for Dowquest, a database search service. The firm chose Connection Machine from Thinking Machines Corp. in Cambridge, Mass. The massively parallel Connection Machine uses 32,000 processors and runs at 4 billion instructions per second.

"It's as risky as you can get," says Frank Panella, director of systems development at Dow Jones. "We needed a fast, reliable, easy-to-use searching machine. We didn't think about an alternative because there was no alternative."

Dow Jones mitigated the riskiness of the technology by developing a close relationship with the vendor. "They modified the product to suit our needs," Panella says. Members of the IS staff also traveled to Cambridge to attend parallel processing classes.

Despite these efforts, difficulties still arose. "There were levels of frustration tied to hardware reliability issues," Panella says. "Things will always break, but it can't be for long because

Francett is a free-lance writer based in Bloomfield, N.J.

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we have to provide the highest quality service to our customers."

His struggles with parallel processing haven't turned Panella into a conservative. Right now, he's working on an enhanced user interface and looking forward to adding artificial intelligence to the system. "A more traditional approach may be less risky, but it's not necessarily best for the organization as a whole," Panella says. "If it's for the good of the organization, then that's the way you have to go."

The value of scouts

One way to cut down on the risk factor is to experiment with new technologies as part of your research and development effort, suggests Norm Weizer, senior consultant at Arthur D. Little, Inc. in New York. "Keep someone looking from the crow's nest scanning the horizon."

United Services Automobile Association (USAA), the San Antonio-based insurer, maintains a continuous five-year R&D program, says Donald R. Lasher, president of the information services division. "We're a $5 billion company. Two million a year is invested in R&D, but we leverage the hell out of it," Lasher says.

The R&D group searches literature for new technologies and applications that may be relevant to business problems. "Technologies are considered on a business-case basis for cost-effectiveness, cost benefit and user buy-in," Lasher says.

An executive council grants funding and approval. Then, USAA launches a pilot with user involvement. A division-level officer sponsors the project when it is ready to go into production. USAA's well-known pioneer imaging system, for example, belongs to the property/casualty division.

USAA is currently developing a number of leading-edge systems. One is a cooperative-processing project. Based on IBM Personal System/2s running OS/2, the IBM Systems Application Architecture-compatible system will encompass imaging, office automation, voice integration, video and IBM's AD/Cycle, Lasher explains.

"In general, we don't like to be first," he says. "We've learned to be careful. You have to make a good business case and make sure you know whether the technology offers a strategic or competitive advantage."

If a technology does pass that test, however, the company doesn't hesitate. "One of our principles is to treat technology as a strategic weapon," Lasher says. "We're not afraid of it. It has stood us in good stead."

When weighing a leading-edge technology, it is also wise to consider compatibility on all levels, advises Michael Packer, vice-president and director of the information technology group at The MAC Group in Cambridge, Mass. "Do you have the skills to maintain the technology? Will it be compatible with your existing systems? Is it the right technology, or will you have to 'rip up track' later?" he asks.

Zale-Lipshy University Hospital, a 163-bed hospital that opened last November in Dallas, decided it wanted to start operation with both the right system for every purpose and an architecture that would link them all. So it bought the skills of Perot Systems Corp.'s health care division in Herndon, Va., a general contractor and systems integrator.

That kind of strategy represents a "tremendous risk," according to Chuck Lyles, a Perot Systems associate. "Most hospitals won't absorb such risk. They'd rather have less functionality," he says.

The way that Lyles chose to minimize the risk was to take a standards-based approach using a common user interface to allow a wide variety of platforms "to execute transparently to the end user." HL-7, a standard hospital-industry protocol, allows plug-and-play integration across all departments.

"Our environment is a distributed network," Lyles says. "Each department has its own database with connectivity between systems." In addition, the individual databases are duplicated on a common SQL-based database from Quantitative Medicine, Inc. in Annapolis, Md.

Lyles had no formal risk-management plan. However, he says he believes insistence on adherence to standards reduces risks substantially. "In some cases, the standards aren't there yet, but they will be," he says. "We developed a system for the hospital to grow into."

According to Lyles, Zale-Lipshy's Chief Executive Officer, Dr. Ronald F. Garvey, believes it makes sense to have the best tools to attract the best physicians. In turn, they bring in patients and generate revenue.

Business needs should drive the choice of an advanced technology, says Gavin Finn, consulting engineer in the advanced systems development services division of Stone & Webster Engineering Corp. in Boston. Finn, who develops expert systems for manufacturers, utilities and aerospace companies, says he makes sure that the problem comes first and the technology second. "We do a functional analysis and requirements specifications first. We don't decide on software and hardware tools until we're somewhere into the project," he explains.

That approach also reduces the need for software development, which Finn says represents another risk factor. "We use commercial packages and do as little software development as possible," he says.

The downside potential in expert systems projects, Finn adds, can also be reduced by investing a lot of time up front. "Building an expert system is an iterative process. It's important to break down the problem into workable pieces and do a good job at the first stage. If we can get our arms around the problem the first time around, we know we'll be successful on the next step," he says.

Know your target

That's a principle that can extend to any kind of advanced technology project, according to Peter G. W. Keen, executive director of the International Center for Information Technologies in Washington, D.C. His translation: "Use advanced technology on an application you understand well."

There's nothing that Unum Life Insurance Co. understands quite as well as claims processing, so it is fitting that the three new technologies the Portland, Maine-based company is piloting are all aimed at that application.

The company now has a project under way to combine image processing, knowledge-based systems and claims life-cycle management.

John Alexander, senior vice-president and chief information officer at Unum, says each of the three technologies was chosen to fit elements of the process: imaging to move massive amounts of claims information electronically, knowledge-

Continued on next page

> "In general, we don't like to be first. We've learned to be careful."
>
> DONALD R. LASHER
> USAA

WHAT EXACTLY *IS* AN ADVANCED TECHNOLOGY?

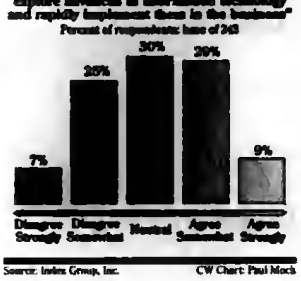
To one firm, it may be computer-aided software engineering tools; to another, neural networks. The definition is really context-dependent, says Michael Packer, vice-president and director of the information technology group at The MAC Group, a management consulting firm in Cambridge, Mass.

An advanced technology can be any of the following:

- An unproven technology yet to be demonstrated as technically feasible.
- A technology that is feasible but with few, if any, production implementations.
- A technology that has been adopted by many but is new to your company.

Walk, don't run

IS executives report lukewarm corporate support for exploration and implementation of advanced technologies



How a bank insures technology deposits

In the banking business, there's as much or more risk attached to avoidance of technological innovation as there is to investing in advanced technologies, says Jim Breen, vice-president of technology integration at the Royal Bank of Canada in Toronto.

"Banks depend on technology for customer service and service delivery to all their lines of business," he says. But the fact that everything is so customer-driven also means "the impact of failure is very high. Any disruption can cause chaos."

In the interest of minimizing the possibility of technology-induced chaos, Royal Bank has instituted a formal risk-management process.

Before work commences on any project, the project manager must fill out a questionnaire that contains approximately 60 questions dealing, in roughly equal parts, with the size and duration of the effort, the complexity of installation and the sophistication of the technology.

The purpose of this exercise, Breen says, is to give the project manager a means of identifying all the various risks attached to a project and of assessing their gravity. "At the end of the process, they analyze the risk. For example, a grade of low risk on complexity and technology but high on size would result in an overall medium-risk rating.

If you can't beat 'em

Once risks have been identified, the project managers must figure out how to either eliminate or manage them.

Managing risk, Breen says, requires knowing what the probability is that things will go wrong and what the likely consequences will be — not just for IS, but for the entire business.

According to Breen, other risks the Royal bank plans to assess with the same method include operations risks and shareholder risks. "We must also recognize the extent of organizational changes and provide stability with specific communication programs," Breen says.

Royal Bank takes both information and management of information technology risk very seriously. According to Breen, the bank has four strategic management plans: Managing technology and the information resource is one of them.

"We're changing the culture from managing processes to managing information," he says. "Risk management is an absolutely critical success factor."

BARBARA FRANCETT

From previous page

based systems to guide and review claims processors' decisions and the claims management system to help maintain claims records after processing. "Our focus is on improved customer service and improved productivity," Alexander says. "These technologies will make claims processing easier, faster and cheaper."

Alexander chooses the new technologies Unum will develop based on informal research. "We try to structure projects somewhere between maximum bang for the buck and minimum regret," Alexander says. "There's new opportunity but the possibility of failure, too. We talk to people on the bleeding edge and try to infer what the payoff would be for us."

> "WOULD our customers use the system effectively? Would they be able to support it? That was the nature of the risk."
>
> CHARLES DARNELL
> LITHONIA LIGHTING

Introducing a new technology at Unum is a three-way deal, Alexander says. Once a promising new technology has been identified, IS looks for a partner in the division-level application development and data administration groups and a customer for that technology in the line divisions' business managers. "We don't do anything without a customer ready to allocate resources," Alexander says. "If we can generate a partnership, we're generally pretty successful."

Occasionally, projects have failed, Alexander says, but it's rarely the technology that's to blame. "If costs or resource requirements are too high, the technology washes out early," he says. "Inadequate training, misunderstood business needs, poor project management — these are what can kill a project."

Plugged into users

In implementing leading-edge technologies, the way you address organizational issues can also be a make-or-break factor. At Lithonia Lighting in Conyers, Ga., a change in the fundamental nature of the business and a competitive opportunity motivated the company to create an unprecedented system. However, attention to user issues was key to making the system work.

The company undertook its Lightlink project, made up of hardware, software and network links, to push information systems out to its customers. The Lightlink system is now a fixture. The company's 107 agents, 200 distributors, 2,000 specifiers and 1,800 contractors all use it regularly for pricing, quotations and order-entry tasks. But in 1983, it represented a daring move.

"Would our customers use the system effectively? Would they be able to support it? That was the nature of the risk," says Charles Darnell, senior vice-president and general manager of the management, information and electronic systems group at Lithonia. Having identified the risk, he and his group set out to diminish it. "We acted as missionaries. We presented a program that we boiled down to system features, functions and benefits. We took every opportunity to do videos, slide shows, one-on-one meetings and evening workshops," Darnell says.

That kind of attention to user concerns has continued. "Every time we do a major enhancement, we send a person to spend a week or so to be there with [customers] night and day. We want to make sure they're totally comfortable," Darnell says. "And we pay the whole bill."

Such solicitousness has paid off in an enhanced competitive position. Lithonia's share of the lighting market has increased steadily over the years, while its competitors have lost market share. "Sales increased sixfold from $96 million to $559 million from the beginning of the first generation of Lightlink," Darnell says.

The need to make the organization more effective and responsive to business changes pushed The Hon Co. in Muscatine, Iowa, to adopt advanced technology, says Jim Goughenour, until last fall the vice-president of MIS and now the vice-president of customer service and distribution at the nation's third-largest office furniture manufacturer.

Early this year, Hon began using Linc, a fourth-generation rapid application development tool from Unisys Corp. "We want applications up and running as soon as possible," Goughenour says. After piloting the tool in a budgeting application, its use is now being expanded to general-ledger and accounts-payable applications.

"Linc requires considerable computer resources, but it saves time," Goughenour says. "What used to take three to four weeks now takes three to four days. We can change applications rapidly to suit the business environment."

Goughenour began the project with a pilot. The vendor lent the software at no charge, a tactic Goughenour recommends. "If the pilot was successful, it would mean a big sale for them. It was a gamble they felt they would win. We also had a consultant from the supplier to eliminate the glitches we would make from ignorance." End users were intimately involved in the design of the system, Goughenour says. "We formed task teams of users and MIS. The users knew the application, and MIS knew the technology," he adds.

Goughenour's approach to scheduling also helped reduce risk. "We set target dates, but we didn't bind ourselves to that. It's more important to put in a quality product," he says.

The manufacturer is currently developing a parts order-processing system using Linc. "We're working to become a world-class manufacturer," Goughenour says. "We're using the technology to empower people. To be effective in the global market, you need to use every mind you've got."

New yardsticks

Once the projects are up and running, assessing the impact of leading-edge technologies such as those used by these companies is not easy. Although traditional cost/benefit analyses and measures of profitability and market share changes may help, it's often difficult to trace the impact of an information system to a bottom-line result, says C. Lawrence Meador, president of The Softbridge Group, a consulting firm in Cambridge, Mass.

Meador suggests other necessary evaluation criteria, such as changes in the decision process, the effects of decision outputs and procedural changes as well as changes in managerial concepts. Service measures, such as systems availability, convenience of access, reliability and support may also be better indicators of the true value of technological innovations than traditional cost/benefit analyses.

"It takes courage to take a risk and follow it to the end," Goughenour says. "You have to know where the rewards lie, because they're not always translatable in dollars." ●

The don'ts: Common pitfalls

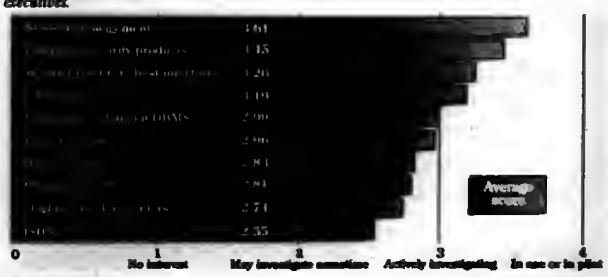
Sometimes the most important thing you can know is what not to do. For example, it is less critical to know that you should drive on the left in England than that you shouldn't drive on the right. In a similar vein, what you don't know about what to avoid when approaching advanced technology projects is more likely to cause harm than a bungled how-to instruction. The following list of prohibitions is based on what consultants say are some of the most common mistakes firms make in using advanced technology:

- Don't choose a highly specialized solution if you can help it. Stick with products that offer flexibility.
- Don't build a system to prove a technology — build it to solve problems.
- Don't install a critical system and test a new technology at the same time.
- Don't set out to solve problems for end users and expect them to sit back and accept the solutions. Involve them in the process.
- Don't be risk-averse just because you might fail. Without the freedom to fail occasionally, you'll be afraid to take any chances, even those that could really pay off.
- Don't become infatuated with technological exotica. The wilder technologies may provide some unusual benefits, but chances are that company management won't care about them or want to pay for them.
- Don't look just at vendors and universities when investigating advanced technologies. Look at what your peers are doing both in your industry and out of it. Read widely and think broadly.

BARBARA FRANCETT

Top priorities

Few companies exhibit interest in technologies such as pattern matching and neural networks. Below are the new technologies that register highest on the interest meter in a survey of 243 IS executives.



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Citicorp blends technologies as means to corporate ends

BY SHERYL KAY

Although Kerry Severin sits on the user's side of the desk at Citicorp in Tampa, Fla., she has a true appreciation for high technology. "Using advanced technologies in the information systems department will be the key to our division achieving its productivity goals," the vice-president of operational strategic planning at the global payments products division says. "These tools will ultimately give our customer service reps the ability to do more — smarter and faster."

Severin is referring to the Integrated Systems Project (ISP), the largest application development project ever attempted within Citicorp. This summer marks the culmination of the three-year effort and the unveiling of an integrated database system that processes and tracks the sale and usage of products around the world, including traveler's checks, money orders, official checks and electronic funds transfers. Two hundred technical professionals located in Tampa, Chicago and Buffalo, N.Y., were involved in the project, which entailed replacing 42 stand-alone systems with 15 integrated ones.

The programming and data reconciliation tasks involved in creating a worldwide integrated system for use by individual customers, commercial clients and Citicorp customer service and sales staffs in 92 countries were formidable. In total, 2.2 million lines of fresh code had to be constructed. That couldn't happen, however, until the data files from all of the 42 original systems were organized and reconciled. According to Dave Starr, senior vice-president of information technology, that chore accounted for one-fifth to one-quarter of the labor investment.

"With hundreds of millions of records of data, some dating back 15 years, you can imagine it was an enormous task," Starr says. "We had a pile of paper with updates on information from all over the world standing eight feet high in the office."

Bargain prices

Despite these obstacles, ISP came in at a surprisingly low cost — approximately $6 per line of code, according to Starr. By comparison, the publicly quoted per-line costs for the 25 million lines of code created for the space shuttle and the 400,000 lines behind Lotus Development Corp.'s 1-2-3 were $48 and $17.50, respectively.

The ISP team was able to achieve such cost efficiency because it employed a variety of advanced, but not leading-edge, tools in careful combination, Starr says.

Beginning with a personal computing computer-aided software engineering tool called Automate Plus from Cullinet Software, Inc. (now a part of Computer Associates International, Inc.), the first steps were taken toward data normalization during the design phase, by taking base data structures and defining them on-line. "This allowed us to consistently define business procedures across global, multiple-user groups and to get agreement on everyone's current business process flow problems," says Rick Lessard, vice-president of applications development.

Although a problem with the automatic rollback/recovery feature of the Automate Plus software (since corrected) cost a few extra days, Bill Sawyer, manager of data services, estimates a net time savings of at least two man-months by using the product for data normalization.

Moving from the design phase into development, the ISP group used ADS/A, a front-end prototyping tool, and ADS/0, a fourth-generation language (4GL), both made by Cullinet. Lessard estimates that using tools allowed the job to be done in one-third of the time that a Cobol/CICS development effort would have required.

One concern with using 4GL technology is that it can lead to inefficient programming. The ISP group avoided this problem by creating its own "technical cookbook," which Lessard says "explains the proper way to write 4GL technical routines."

In order to use the facilities of IBM's XA operating system to their fullest extent in an IDMS/R environment, Citicorp called on two database management system performance enhancement products: Fast Access from Allen System in Naples, Fla., and XADC from International Software in Racine, Wis.

"Those products allowed us to take IDMS/R buffers that reside below the 16 meg line and move them above the line into XA storage," Sawyer explains. "That way, we have up to 64 meg buffer sizes, which drastically reduced our I/O."

Another tool Sawyer says he thinks probably saved thousands of hours of programming time is a migration utility. When an on-line program had to be moved from one region to another, the Laderman Migrator from Laderman Associates in Yardley, Pa., took that program, along with all of its associated entities, put them into an extract file and then generated the correct syntax to put the file into the data dictionary in the other region.

Perhaps one of the most important technologies used during the project was LU6.2. Incorporated as SEND/RECEIVE routines in the ADS software, LU6.2 protocols allowed the technician to go from one region of the operating system to another to facilitate concurrent updates in sync.

LU6.2 is not without drawbacks. Updating across multiple regions adds complexity, Lessard says, and "probably added 50 to 60 man-months of effort." But the result, he adds, was greater throughput and faster updating, "which means we saved hundreds of thousands of dollars by delaying the procurement of additional DASD and more sophisticated hardware."

Combined strength

Starr points out that any one of these technologies alone would not have made a significant difference in the cost or speed of development. Taken together, however, the suite of technologies made an appreciable difference in both the budget and delivery time for a system that represents a considerable advancement in Citicorp's business system technology and may even turn into a commercial offering.

With ISP, Citicorp in Tampa has gone from 6,000 standalone, nondatabase files to 1,500 files and from 7,000 existing data elements to 2,300, of which 20% are new elements. "The enhancements to our own systems department are incredible," Starr says.

From the user perspective, Severin notes, the development of ISP as 15 integrated systems has changed Citicorp's view from a fragmented product orientation to a cohesive customer orientation. Because ISP is a completely table-driven system, she says, each customer service representative at Citicorp becomes a knowledge worker and is able to assume many more functions, handling any type of product inquiry during the course of a single phone call.

In addition, she says, the system will "allow us to set prices and establish process procedures uniquely suited to each client's needs and, in turn, maximize our total profitability."

With this revenue enhancement, Starr says he expects that Citicorp will be able to introduce more products and services and may even try out riskier technologies than it would have been inclined to sample before. ●

Michael Maurer

Citicorp's ISP technical management team. *Sawyer and Lessard, second and third from left.*

Kay is a business consultant and freelance writer specializing in emerging technologies and human resources.

Success often elusive for advanced tech group

BY SABINA SKULSKY

Shaking up "business as usual" may sound like an unorthodox charter, but for advanced technology groups seeking more efficient ways to get the job done, it is a measure of their success.

The Strategic Technology and Research (STAR) group at Manufacturers Hanover Trust Co. in New York is successful in the eyes of Kenneth Hamilton, technology officer at the firm's global bank, because it fulfills a mission to find and participate in leading-edge technological efforts that improve the way the company does business.

In 1987, one of the team's projects transferred the bank's forward-trading operation from a back-office data entry system to an expert system that readily detects trading patterns and anomalies, doubles as an interactive training tool for new traders and makes money to boot.

Improving operations is also a measure of success at J. P. Morgan & Co. in New York. "You know you're successful when you can demonstrate a significant productivity improvement," says William Rabin, senior vice-president of strategic program management. Rabin can do this with a current project involving a component computer-aided software engineering (CASE) environment that will save many millions of dollars and deliver a major system many months earlier than otherwise possible, he says.

Manufacturers' Hamilton *cites benefits to business*

Such stories cast a rosy glow on the ability of groups to turn technology to real advantage. But most groups are largely unsuccessful. For instance, only 7% of respondents to a June 1989 survey of 94 corporations deemed themselves successful in terms of rolling out technological benefits to their firms, even though 81% of them employed some form of advanced technology group. (Respondents were among Fortune 250 companies that sponsor Partnership for Research in Information Systems Management, or PRISM, a joint venture between Index Group, Inc. and Hammer & Co. in Cambridge, Mass.)

Technology groups can fail for several reasons. Most problems originate because groups find it difficult to enlist influential sponsors in the organization. Without such support, the groups do not obtain sufficient funding from senior management. "It's a sale that has to begin at the top," says Sara Kaull, associate director of PRISM.

When upper management is not convinced that an advanced technology group is contributing to the company's success, the short-term profit focus held by

Continued on next page

Skulsky is a recent graduate of MIT's Sloan School of Management concentrating in corporate strategy and operations research.

many firms makes the group a prime target for cost-cutting. This is a short-sighted view on management's part, Kaull says, but is often the case. Frequently, she adds, management lacks faith in research and development efforts and doesn't believe the group can yield sufficient payback to justify the investment.

Another obstacle that these groups face is the IS organization's resistance to change. Executives who are highly skilled in one technology may see an emerging one as a threat and become reluctant to adopt it.

Keep an eye on eagles

Companies can improve the success rate of their advanced technology group endeavors by watching what successful firms do and looking at several key factors: who participates in the group, how the process works, where the emphasis is placed and what types of organizational structures are used.

Kaull cites three types of people needed in the group: those with a business orientation, to provide an understanding of the customer base; those with a project-management focus, to give insight into systems development; and those with technical expertise, to make it tick.

How the groups operate is also critical. Senior executives must understand the advanced technology group's mission so it can be filtered down through the IS organization. Manufacturers Hanover's STAR group, for example, is a full-time team reporting to the executive vice-president for corporate systems and a technology committee staffed by business managers. There's more than one way, however, to organize a group to overcome hurdles.

At Morgan, there are eight groups collectively called "strategic programs." The programs focus on such activities as trading architectures, office automation, data security, networking, transport layers and CASE. Although only a portion of one program is specifically regarded as an advanced technology group, other programs perform a similar function as they undertake projects involving new technologies. One of the eight programs is dedicated to providing internal marketing efforts for and disseminating information to the remaining seven; it informs the groups about new technologies, outlining their particular relevance to Morgan.

Each program has its own manager as well as a corporate sponsor, such as the chief financial officer. Furthermore, three corporate committees consisting of senior business executives provide overall sponsorship for the programs. This illustrates the high-level commitment and companywide awareness that are critical success factors for advanced technology groups, says Rabin, who oversees all of the programs.

Striking a balance

Another factor Rabin cites is balancing work load and goals between current and future needs. The groups at Morgan support current projects through activities such as consulting and data modeling as well as investigate new technologies for future implementation.

Rabin further attributes the success of the programs to keeping the groups small and focused. He explains that Morgan's groups number only seven or eight people each but that they, in turn, leverage a network of local data managers in every business area throughout the firm.

Structure can also be used to keep groups focused on a primary objective. Reporting structures are particularly important in this regard, says Michael Packer, vice-president and director of the information technology group at The MAC Group in Cambridge, Mass. Groups can report to the head of IS, can exist together with the standards and policies group or can be included within the strategic technology planning and administration function, be explains.

Morgan's Rabin *looks for measurable results*

Another way to categorize groups is by their nature and makeup. According to Kaull's definitions, "labs" are groups of technically oriented types removed from the business and IS functions; "consultant" groups are more integrated into business operations; and "virtual" groups are future-oriented, with teams convening on a project basis and then disbanding.

This spectrum runs from conservative to risk-prone. The optimal structure for a particular group depends on the nature of the company and the industry. Kaull says the consultant structure is the most prevalent form overall, but in utilities and financial services, for instance, labs are predominant.

It is crucial to design a group to streamline the means by which an organization's overall goals can be met and top-down commitment can be won. "Groups should have clearly defined objectives and a mission tied to the overall economy of the organization. Ill-defined groups fail," says Paul Cosgrave, managing partner of integration services for the Northeast at Andersen Consulting in New York.

Packer agrees that groups must keep objectives in mind and stresses that it's important not to become enamored of technology to the point that it undermines the need for practical results. ●

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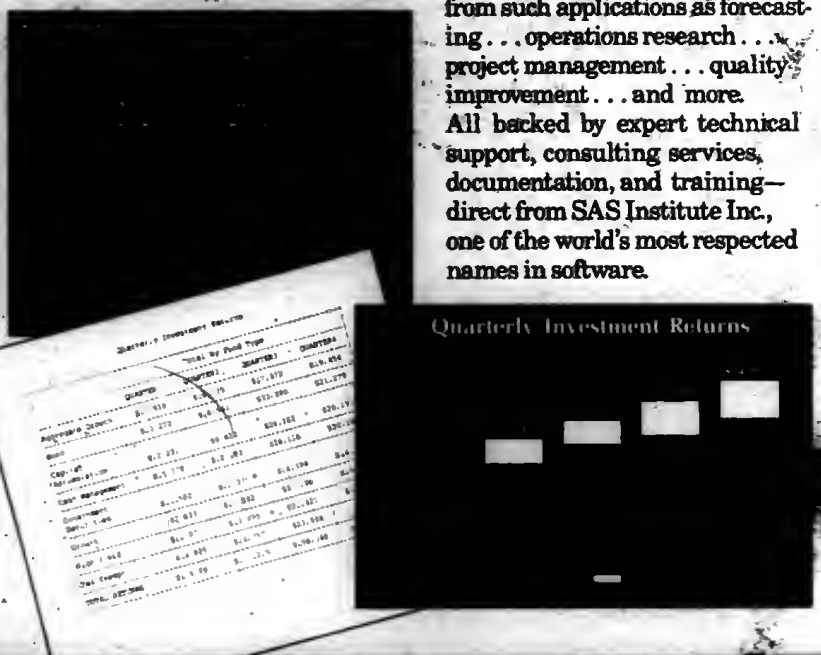

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Do a data center makeover

As an alternative to outsourcing, data center restructuring can help organizations get more for their IS dollars

BY THOMAS WALSH

Your chief executive officer has caught the outsourcing bug. He's demanding lower costs and higher service levels. He'a read a little about outsourcing and wants you to look into it. You've already done some investigating and have a strong feeling that neither outsourcing nor decentralizing is quite right for your operation. "Have you got a better idea?" asks the CEO. "Restructure," you answer.

Put simply, restructuring means examining and reorganizing available resources in a way that cuts unnecessary costs and improves service. It's a way of getting more for the information systems dollar.

Successful data center restructuring takes two things. The first is good management, which means having the skill to manage relationships among upper management, users, peers and employees. The second is adept use of some key elements (see below).

If used creatively, the 12 elements of data center restructuring can transform a high-cost provider with poor service into an effective, efficient data center operation. The prerequisites are good management, two to three years to achieve the turnaround and a reasonable level of demand for the data center's services.

The payoffs: head counts reduced by 40% to 80%, cost per million instructions per second (MIPS) slashed 30% to 60% and staff availability boosted by 2% to 5%.

■ **Element 1: A committed work force.** Many business leaders say participative management is crucial for survival in the next decade. The data center is no different. The keys are involvement, bottom-up decision-making, empowerment and trust.

In most data centers (and companies, for that matter), these ideas are revolutionary. But there are enough committed work force success stories to demonstrate that they work.

To get started: Read the literature. Search out companies in which participative management has succeeded — and failed. Determine what form is best: Participative management in a nuclear power plant looks quite different from that in a small software group. Request help from your human resources department, but expect resistance.

■ **Element 2: Performance management.** In most data centers, performance management has a low priority. The prevailing attitude is, "If there is a problem, I'll tell you about it. Otherwise, you are doing OK." The nature of data center management might explain this attitude: For many data center managers used to dealing with technology, dealing with people can be discomforting or unpleasant.

Still, performance management must occur. It must also be applied consistently and fairly. People need to be provided with the following: the knowledge of what they are supposed to do, for example, job descriptions and objectives; the skills to perform their job, for example, training plans and training; the tools and systems to perform their jobs without undue interference; consistent written and verbal feedback (both good and bad) of how they are performing their work; and punishments and rewards.

While restructured data centers operate with relatively few people, they do not employ marginal performers.

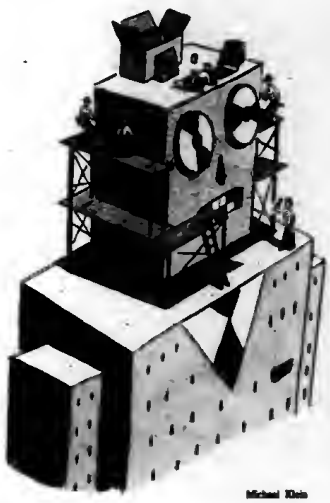
■ **Element 3: Work redesign.** Data center work should be considered a nonroutine, complex activity. The approach to redesigning work has three steps: reviewing the current organization, redesigning the work and implementing a new organization.

Work redesign is best as a participative activity. No one knows the work better than the personnel already performing the activities. However, fear, mistrust and resistance to change will prevent most groups from eliminating jobs if needed. This takes management prodding and requires management to understand enough about the work to know where it can cut staff.

■ **Element 4: Linkage analysis.** Examining the interactions between the data center and user organizations and vendors can often yield opportunities for improved efficiency and effectiveness.

Whenever possible, users should have the tools and training to do the job themselves. It helps to keep in mind a simple principle: Don't perform tasks where there is no value added. This principle can be applied to data entry, computer scheduling, program parameter submission, printing and so on.

■ **Element 5: Relationship management.** Like Topsy, the "it-just-grew" nature of the data center is often a source of conflict between IS and upper management. The latter just doesn't see IS as unique. Instead, it'a seen as simply another business with customers, products, costs and sales. Therefore, the first responsibility



Michael Klein

Walsh is director of MIS network services for Champion International Corp., a Stamford, Conn.-based producer of paper for printing, publications and newspapers.

- **Follow a 12-step program**
- **Boost performance while keeping control**
- **MIPS costs slashed by 30% to 60%**

of the IS manager is to communicate in business terms.

The data center should take the initiative and meet periodically with upper management and key client managers to present the state of the data center business. What is happening to unit costs? How do costs compare with those of competitors? How well are service objectives being met?

Presentations to management can be opportunities to demonstrate that the data center cares about how it is doing, how it is perceived and that it treats users as valued clients. As a prelude, identify and meet with key clients who contribute heavily to upper management perceptions.

Spending time developing informal, personal relationships is a good idea. It can provide intelligence that will help head off problems before they become critical.

● **Element 6: Chargeback.** A chargeback system must match company culture. How does the company treat transfer pricing? How sensitive is the subject of cost control? Does the company make decisions in a decentralized or centralized manner? Historically, how have capital expenditures been justified for the data center? Does the user have the option to go outside or acquire his own computing facilities? Should the data center be a cost center or a profit center? Should standard costs be used? What should be done about shortfalls in recovery? How should over-recovery of costs be handled?

All these issues need to be worked out within the context of the organization the data center serves.

● **Element 7: Sourcing.** Competitive negotiations are often left to the purchasing department. Thus, it's a good idea to get to know the purchasing agents. Develop a team approach to competitive negotiations. Create a competitive situation for every acquisition; for example, hardware, software, maintenance supplies and so on.

The presence of head-to-head competition forces prices down. To be successful over the long term, a creditable competitive situation must be created. The data center manager must be willing to exercise competitive alternatives. Be creative when negotiating: Maybe the vendor can't reduce the price of a mainframe, but it may be willing to include software or put caps on future maintenance increases.

● **Element 8: Asset management.** Data center assets include hardware, software and communications equipment. The first requirement of managing these assets effectively is to create an inventory.

The most difficult aspects of creating an inventory are defining and enforcing the procedures related to ownership of the asset; for example, who has authority and responsibility for adding, deleting and changing data in the inventory. Asset data should include a description, serial number, purchase or lease cost, maintenance cost, vendor, etc. Having the inventory database on-line on a centralized mainframe will facilitate providing access to the various departments that will need access: data center, accounting, purchasing, facilities, etc.

Smart asset management requires managing demand. This means that diplomacy of the highest order is needed. An example would be to look at the recent demands of manufacturing and to point out tactfully to the key manufacturing client that over five years, this demand could require millions of dollars in capital spending in the data center.

Enlist the client's support in finding solutions that are best for the company overall. There may be a simple application that accounts for significant chunks of daytime work load. Lobby to organize a joint project to optimize this application to reduce computer resources.

The carrot for the client is reduced chargeback.

Good asset management practices will yield dividends in keeping costs low.

RESTRUCTURING means examining and reorganizing available resources in a way that cuts unnecessary costs and improves service. It's a way of getting more for the information systems dollar.

● **Element 9: Simplification.** Over time, data centers tend to grow in complexity. New hardware and software are added; little is completely eliminated.

Complexity carries hidden costs and can create service problems. Sometimes, chargeback can be used to help eliminate an old technology or service. Careful evaluation of new technologies and services can reduce potential problems. Strive for simplification of the operating environment.

● **Element 10: Systems management.** Establishing systems management disciplines is essential to efficient, effective data center operations. These disciplines include network control, problem management, change management, situation management and service management.

At the center of these disciplines is the requirement for an administration database that includes information on configuration, inventory, security, billing and invoice reconciliation, changes, work orders, problems, service-level agreements and performance.

The database is the foundation of an internal data center application that can have a major impact on service. Tracking of problems and changes can have a positive effect on availability, which is probably the single most important factor affecting how users perceive the data center. A work-order subsystem can improve service by supporting the data center staff members in activities such as installing terminals, a time-consuming task that requires a high level of coordination.

Systems management discipline should be institutionalized and become the "way of life" for the data center. Examples include morning meetings every day to discuss the previous day's problems and the next day's changes. Every major problem should be followed by a postmortem meeting to discuss how the problem could have been avoided or how the mean time to repair it could have been shortened.

Management reports on service should be widely circulated, posted prominently in the work areas and discussed frequently at meetings. Once data center employees sense that information systems management is obsessed with providing good service, positive things will start to happen.

In addition to improving service, good systems management procedures can reduce hardware maintenance costs — vendors will provide lower prices to customers that manage problems well and don't make spurious maintenance calls.

● **Element 11: Upscaling.** Often, arguments are made for the lower cost per MIPS of minicomputers and personal computers. However, when utilized MIPS are considered, the gap narrows. Data centers are usually run around the clock, seven days a week. In contrast, personal computers spend the majority of their time idle.

There are two approaches to developing economies of scale. The first is data center consolidation. One thousand MIPS data centers can be managed effectively, and given the economies of scale, they can be efficient.

The second approach is to attract new applications. Being a low-cost supplier and providing focused service will result in making the data center an attractive host for many database/data communications-based applications.

● **Element 12: Automated operations.** Automated operations can eliminate many tasks performed by current data center staff, particularly low-level personnel.

Automated operations can improve service by computerizing repetitive tasks. Worker involvement is important to a successful automated operations program, but management guidance, technical support and extensive training are also necessary for success.

A final word: Restructuring should be viewed as a process — not a project. Improvement must be what the Japanese call "kaizen," or continuous improvement. To succeed, the staff needs to embrace the idea of change and constant training. Restructuring is mostly a people issue, not a technical one. ●

Reshuffling the deck

BY LORY ZOTTOLA
and STEFANIE MCCANN
CW STAFF

There was no room for arguments at Stamford, Conn.-based Champion International Corp. when it came time to make a decision on how to improve its data center. Restructuring, rather than outsourcing, was the answer for the Fortune 100 paper company.

"Restructuring let us make the changes ourselves at a lower cost and with more control," says Thomas Walsh, Champion's director of MIS network services.

The need to restructure the data center to eliminate unnecessary costs and improve service became apparent following Champion's 1984 merger with St. Regis Corp., a paper company based in New York.

The merged organization had two data centers that employed a total of 200 people in Dallas and Hamilton, Ohio. The centers were similarly equipped.

For example, St. Regis' Dallas center and Champion's Hamilton center both had in place IBM 3081 and 3033 processors, NCR Comten front ends and IBM Systems Network Architecture networks. The operating systems included IBM's MVS in Hamilton and MVS and VM in Dallas.

The result was an expensive duplication of processes. By 1985, the Dallas building and its IBM 3033 were sold, and processing for the company was centered in the Hamilton facility on the two 3081s and a 3033. Today, operating systems include IBM's MVS/XA and VM/HPO.

With the dual data center problem taken care of, Champion's management in 1986 announced a restructuring program to refocus the business and reduce overall costs by 20%. Teams were formed throughout the organization to carry out this mandate.

In the information systems department, a team set out to do the following to restructure:

- Reorganize IS for better focus and accountability.
- Close five small terminal sites that were running remote job entry.
- Close the Hamilton computer input department and move the work to user areas.
- Eliminate obsolete hardware and software.

During the four years following management's restructuring push, a single data center was formed from five IS departments to handle data processing, customer and technical services, contingency planning, security and network control. Data center staff dropped from 130 to 54 employees. Data center availability jumped from 90% to 95% to 99.5% plus. Chargeback and security procedures were put into place. The addition of network control procedures pushed network availability to 99.8% plus.

Champion

The company is also in the midst of a project to automate console activities. To this end, it is studying work done by IBM in which the company cut staff in its operations area and achieved limited unattended data center operations.

Restructuring, Walsh says, has helped Champion to increase its processing capabilities 150% while cutting costs by 7%.

According to Walsh, the key enabler during restructuring was Champion's participative management philosophy. "Everybody has a say in how their jobs are done," he notes. "Their opinions and the knowledge of the individual worker is important."

Walsh sees restructuring as "the whole process — it covers a magnitude of steps that make the organization more cost-effective and enables it to improve service." ●

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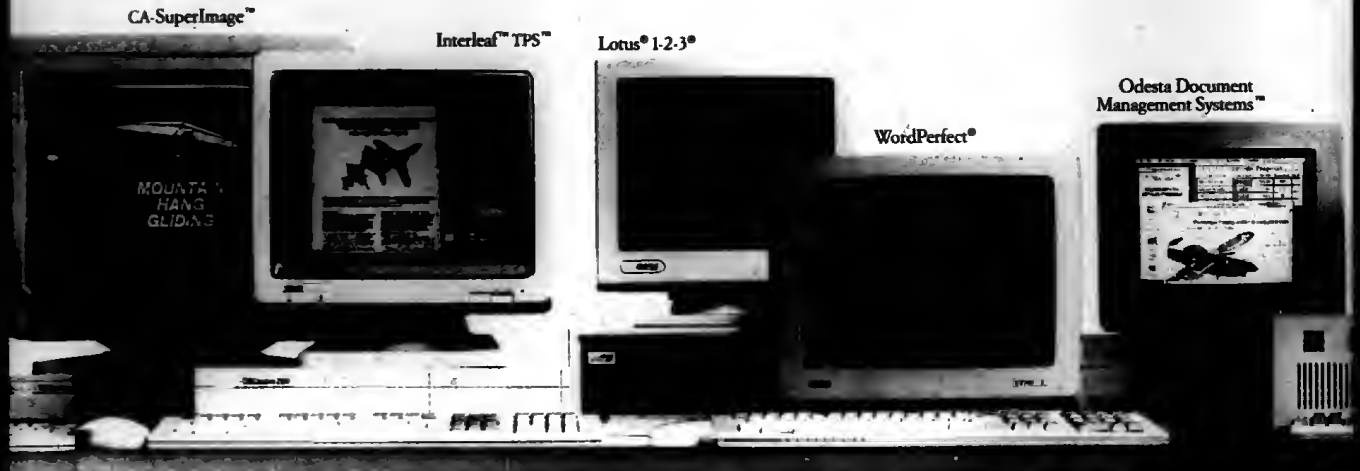

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LEGENT

NATIONAL
BRIEFS

It's official

Former **Maxtor Corp.** Vice-President of Corporate Development **Taroon Kamdar** has been named the president and chief executive officer of the latest Maxtor wholly-owned subsidiary: Longmont, Colo.-based **Maxtor Colorado Corp.**, which came into being last week when Maxtor closed its $46 million April purchase of fallen former competitor **Miniscribe Corp.** Kamdar, who led the acquisition team, will report directly to Maxtor President and Chief Executive Officer George Scalise. Maxtor Colorado, aided by $30 million from Maxtor for the reconstitution of Miniscribe, will be manufacturing 3½-in. disk drives in Colorado, Hong Kong and Singapore.

■

Eastward ho

With last year's revenue from its European operations safely beyond the $1 billion barrier, personal computer maker **Compaq Computer Corp.** is ready to light out for the latest frontier. Last week, **Zelimir Ilic**, a Yugoslav national who has set up eight Compaq subsidiaries in Western Europe, was named to the newly created post of managing director, East Europe. Ilic, who will be stationed in Munich, West Germany, has already made the first step toward accomplishing his mission of opening up the East for Compaq: He announced that four dealers have been authorized to sell the complete Compaq line in Yugoslavia.

■

Toward kinder, gentler computing

Deer Park, N.Y.-based **Biomechanics Corp. of America**, which claims to be the largest ergonomics firm in the U.S., could be aiming at a new buzz-phrase: look-and-feel-*well*. The firm recently formed a new division, HumanCAD Systems, specifically to make and market ergonomic software products.

More briefs on page 100

Marathon mind-set wins race

BDM used steady pace of CASE tools and team effort to achieve government contract

BY GARY H. ANTHES
CW STAFF

It was early 1986, a period that McLean, Va.-based BDM International, Inc. now refers to as "the bad old days." Widely acclaimed as one of the best of the small high-tech government contractors, BDM seemed to have bitten off more than it could chew.

Accustomed to systems development projects on the order of $500,000 or so, the $191 million-a-year firm had in 1984 won a contract from the U.S. Air Force that was worth more than 400 times that amount — $210 million — for which BDM is now expected to deliver some 4.2 million lines of custom software. A trivial system it was not; the functional description alone occupied 7,000 pages of documentation.

BDM won approval to overhaul the Air Force Logistics Command's mammoth material requirements planning system, to be built around a 390G-byte database encompassing a one million item inventory of weapons parts worth $28 billion.

BDM defeated Computer Sciences Corp. for the job in a "compute-off," in which each firm delivered a small working prototype of the system.

BDM decided to build on that pre-contract success by doing more of the same. Mark C. Filteau, senior vice-president, explained, "We used an extension of the techniques used in the compute-off. It was a lot of people working very hard, a lot of silver bullet approaches. It was the Mao approach to software development — 'let 1,000 flowers bloom.' "

However, techniques that win 100-yard sprints do not work so well in marathons, BDM found. Error rates in the first software delivered were unacceptably high, and documentation was poor. The Air Force was unhappy and so was BDM. "It was killing us to produce things we were not proud of," Filteau said.

Now, a little more than three years later, the situation has completely turned around, BDM and the Air Force asserted. The company and the customer both said that productivity has increased 30%, while software and documentation errors have plunged by 94%, from eight to .5 errors per 1,000 lines of code. Meanwhile, BDM has been able to cut its staff from 280 people to 150 while running under its

Continued on page 101

Way to go

Three years ago, small McLean, Va.-based BDM International, Inc. flew off on the wrong course when it won the contract to overhaul a gargantuan U.S. Air Force software system. Today, the project is flying high, thanks to the following turnaround tactics

- BDM moved from high-speed to rigorous use of CASE tools and followed up with a focus on methodologies.
- The company shipped working core pieces of "brilliant but eccentric technicians," emphasizing teamwork instead.
- The mammoth project was reorganized into six product teams of 10 to 12 people, each targeted at a specialty of discrete deliverables.
- An systems integration group was placed under the product groups.
- A [illegible] management/quality assurance group was created.
- Anyone who didn't like the new way of doing things was invited to leave.

CW Chart: Paul Mock

Bipartisan high-tech agendas competing

BY MITCH BETTS
CW STAFF

There is bipartisan support in the U.S. House of Representatives for a permanent research tax credit and for antitrust relief for joint production ventures, but agreement between House Democrats and Republicans on high-technology issues seems to end there.

Leaders of both parties last month announced their separate legislative agendas for making U.S. technology firms more competitive in world markets. The Democratic package of proposals would give the government an active role in setting technology policy and providing financial aid, while the Republican package provides incentives for capital investments.

Mitchell Kertzman, chairman of the American Electronics Association (AEA), issued a statement hinting that perhaps the two approaches could be blended into a bipartisan policy. He said the legislative packages are "unusually complementary to one another," with each proposal containing some of the competitiveness proposals that the AEA supports.

"In fact, it now seems that the time may be right for a bipartisan approach to a legislative technology program," said Kertzman, president of Computer Solutions, Inc. in Burlington, Mass.

However, the House Democrats and Republicans did not seem in a cooperative mood when they announced the competing agendas. Rep. Tom Campbell (R-Calif.) said the Republican plan is "smarter, bolder and more in tune with the needs of American businesses" than the Democratic plan.

Democrats blasted the Bush administration's free-market approach to technology. Rep. Edward J. Markey (D-Mass.) said that with technology policy, administration officials are like cartoon character Bart Simpson — "underachievers and proud of it."

The Democrats' proposal includes government assistance for advanced manufacturing technologies, business/university collaboration and the use of computerized manufacturing systems in small businesses. It also requires the president to publish a five-year plan to support high-performance computing research and to create a High Resolution Information Systems Board to monitor that particular technology.

The Republicans' proposal includes a tax cut for capital gains from long-term investments, a tax credit for investments in new manufacturing equipment, reform of product liability laws and stronger protection of U.S. intellectual property.

The Computer and Business Equipment Manufacturers Association endorsed the Republican package. CBEMA also said it identified two positive elements of the Democratic agenda: a bill giving antitrust relief for joint production ventures and a bill to reform the U.S. export control system. Both groups praised legislators for stressing the competitiveness issue.

Government roles

The U.S. government's role in the computer/electronics industry is a mixture of abstinence and guidance, while the governments of India and Brazil are involved in management

Source: U.S. Department of Commerce

CW Chart: Paul Mock

COMMENTARY

Jean S. Bozman

Promises, promises

On a warm day in June, Mikhail Gorbachev strolled the Stanford University campus, stirring as much excitement in Silicon Valley as a rock star. From the Valley, the Soviet president raced northward to a San Francisco luncheon with business executives, where he promised a new era of Soviet trade relationships with U.S.-based computer firms. There was applause all around.

"You [immediately] had the impression you were in the presence of an enormously powerful leader," recalls Oracle Systems Chief Executive Officer Larry Ellison, who attended the Gorbachev luncheon. "He said the Soviet Union was already taking risks and that it was our turn to take risks in business."

Gorbachev was a convincing cheerleader for the benefits of international trade one month ago. But the rock-tour excitement of that balmy day is gone, the concrete results of that visit are being tallied — and the final count might not be quite as high, quite as soon as we hoped.

In the days after the visit, some California firms have revealed their plans to do business with the Soviet Union. Among them are Borland International, Ashton-Tate and Cypress Semiconductor. These plans, to be sure, were already in place when Gorbachev flew to San Francisco. Oracle, IBM and others also have sales efforts under way.

However, executives at other Silicon Valley firms, including Tandem Computers, say they've been working on establishing relationships for two years — and don't expect any immediate breakthroughs.

"There is a great potential there," says Tandem CEO James Treybig, who attended the Gorbachev luncheon. "But some things would have to change in order for us to do business in the Soviet Union."

Among the deal-breakers on his list, Treybig says, would be payment in hard currency, the ability to establish a Tandem subsidiary in the USSR — and a go-ahead from the U.S. government, which still restricts exports of powerful computers.

As an entrant to the Soviet marketplace, Tandem seems to have everything going for it: a computer line that is optimized for banking and telecommunications systems, experience in supporting customers in more than 40 nations and the presence of former Secretary of State George Shultz on the Tandem board of directors. (It was Shultz who organized Gorbachev's Stanford visit.)

However, Tandem's two-year quest to sell computers in Moscow has yet to bear fruit, says Rick Lamb, former Tandem treasurer, now director of USSR operations — and still based in Cupertino, Calif. Lamb travels frequently to the Soviet Union and even met Gorbachev at a Soviet Trade Council dinner last spring.

Recently, Lamb's been making presentations to the "right" people in the Soviet government rather than making sales. Still, the promise of an untapped market — and a great Soviet thirst for high-tech products — keeps Tandem interested.

Lamb thinks the Soviets may "leapfrog" Third World countries in computer technology, because their highly educated work force is prepared to operate complex systems — and because most Soviet computers are outmoded copies of 20-year-old IBM 360 designs.

Practical barriers to volume Tandem sales remain. "There's this big opening in Soviet trade, and you see everybody and his brother charging in," Lamb says. "You get a lot of people who tell you they know how to deal with the West. The problem is, there are no rules right now."

So the question for most Silicon Valley firms looking to the Eastern Bloc for new markets is this: Will Gorbachev spend considerably more time convincing the Soviet bureaucracy to nurture computer trade than he did having lunch with San Francisco CEOs in June?

Bozman is *Computerworld's* senior West Coast editor.

The Oracle work force reshuffle

REDWOOD CITY, Calif. — The second shoe has dropped in Oracle Systems Corp.'s reorganization. The first phase, launched in late May, gave the firm's top sales job to London-based Geoffrey Squire — who is supervising all Oracle sales in the U.S., Europe and Asia.

In a second round of job-shuffling, positions within the three Oracle sales divisions — Oracle U.S.A., Oracle Europe and Oracle Intercontinental — were redefined, with a surprise addition as Oracle U.S.A. vice-president of marketing: Chris Greendale , who until mid-June was vice-president of marketing at Ingres Corp.

The newly named Oracle Intercontinental division will be headed up by corporate senior vice-president Peter Tierney.

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Nixdorf still ailing from management mistakes

THE *COMPUTERWOCHE* STAFF

MUNICH — West Germany's Nixdorf Computer AG recently admitted that significant management mistakes were made during the administration of former Chairman Klaus Luft.

"The enterprise-specific market evaluation in 1987 and 1988, which led to the creation of an additional 5,500 jobs, proved to be too optimistic," the company said.

Nixdorf's dismal forecast for 1989 was fulfilled. The company posted an operating loss of $506 million, over and above the costs of reducing its work force by 2,500 employees and additional restructuring measures. Nixdorf reported a 1989 net loss of $636 million.

The company also recorded a 2% drop in revenue — its first — to $3.13 billion. Foreign business was up 4%, compared with a 7% drop on the domestic market. The order backlog in 1989, however, was 16% less than the previous year's, amounting to approximately $2.56 billion. According to Nixdorf, 9% of this backlog reduction came from restructuring customer services and consolidating subsidiaries.

Sales increased through mid-1989, according to Nixdorf. At that time, however, a surge of speculation about a possible takeover of the company resulted in collapsing revenue, rather than the industry's traditional uptick in the second half of the year.

Merger pending

At least one of the rumors proved true: A merger between Nixdorf and West German technology giant Siemens AG is currently pending.

Restructuring measures became unavoidable in 1989 and included a 23% decrease in investments to $344 million. Personnel and operating costs increased 4% over 1988 figures.

"Substantial losses are still expected" in the current business year until the expected Oct. 1 merger with Siemens, Nixdorf said.

These losses will stem in part from a reduction of 3,500 jobs, of which 1,800 were already cut on April 1.

Aligning Nixdorf's products with that of future partner Siemens is also expected to take its toll.

There is, for example, an overlap in the Unix sector, where Siemens plans to equip its MX systems with Intel Corp. I486 processors and new operating systems. Nixdorf also offers its Targon series in this arena and is expected to continue to offer it after the merger.

Computerwoche is an IDG Communications publication in West Germany.

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INTERNATIONAL

BRIEFS

Cuts, cuts . . .

Faced with what it views as another difficult year, according to Chairman and Chief Executive Officer Carlo de Benedetti, Italy's **Ing. C. Olivetti & Co.** plans to trim its work force by 3,000 to 3,500 people this year through early retirement and government-subsidized layoff programs, the company announced late last month. The cuts are expected to be across all company divisions, which have a total of approximately 57,000 employees.

■

And more cuts

Newly elected **Philips N. V.** President **Jan D. Timmer** last week acknowledged that the Netherlands-based electronics company would take a $1.44 billion charge against annual earnings and cut some 10,000 jobs from its European operations as part of a campaign to get its currently unprofitable computer and electronic components divisions back on track. The charge, according to Timmer, is expected to trigger an annual loss of approximately $1 billion for Philips, on estimated 1990 revenue of $29.95 billion.

■

Green light in Red Square

The USSR Ministry of Finance has given the go-ahead to **"Arthur Andersen in the U.S.S.R.,"** a joint venture company launched by 70% majority shareholder **Arthur Andersen & Co.**, major Soviet bank **Promstroybank** and Russian engineering firm **NPO Dinamo Moscow.** Aimed at aiding existing Soviet enterprises — state and otherwise — in their efforts to make the transition to free market management, the company also marks two milestones: Arthur Andersen's return to practice in the Soviet Union after a seven-year hiatus and its designation as the first professional firm of its kind to be allowed to audit Soviet joint ventures operating in the USSR.

Group complains about lack of property protection in Thailand

BY WILLIAM DENNIS
SPECIAL TO CW

SINGAPORE — The International Intellectual Property Alliance (IIPA) has retained a Washington, D.C., law firm to file a so-called 301 petition for unfair trade practices against Thailand, charging inadequate intellectual property protection on that nation's part.

The IIPA has alleged that Thailand officials are cooperating with or protecting computer software pirates instead of prosecuting them.

The alliance complained that the situation for U.S. copyright owners that are attempting to do business in Thailand has become intolerable in recent months because of the "virtually complete and total failure of Thailand authorities to enforce the law against piracy."

The IIPA sent letters to three cabinet members of the Bush administration — U.S. Secretary of State James Baker, Secretary of Commerce Robert Mosbacher and Trade Representative Carla Hills. All three met with their Thailand counterparts during a recent visit to Washington, D.C., by Thailand's Prime Minister Chatichai Choonhaven.

The letters informed the administration that the IIPA's international enforcement arm received no cooperation in Thailand when it asked for cooperation in raids against pirates. "Even more serious was the fact that death threats were received by [enforcement arm] personnel," the letters stated. "The percentage of cases brought to court compared with the number of pirates caught is insignificant, and no one is convicted."

The IIPA claimed that Thailand has shown very little interest in enforcing its copyright law and even less than that in undertaking the legislative improvements that have been made by every other country in Southeast Asia.

Thailand is currently on the 1990 priority watch list under the special 301 provision of the U.S. Trade Act, which covers countries that, in the opinion of the U.S., have not made sufficient progress toward improving intellectual property protection. Other countries on the list include Brazil, India and China. Thailand was put on the list last year.

The software privacy issue, which has been of mounting concern over the past few years, has taken on an increased immediacy recently due in part to the Software Publishers Association's vigilant efforts to shut pirates down worldwide.

Dennis is on the staff of Computerworld Southeast Asia.

NATIONAL
BRIEFS

Shortfall warnings

Beaverton, Ore.-based **Mentor Graphics Corp.** warned last week that its second-quarter earnings and revenue will be substantially lower than anticipated. Chief Executive Officer Thomas Bruggere predicted no upward swing before the fourth quarter. Bruggere pointed to a panoply of industry and economic trends as responsible for the fact that the late second-quarter sales pickup that Mentor Graphics has come to count on failed to materialize this time.

■

. . . And more

In Cambridge, Mass., **Interleaf, Inc.** — still in the throes of a thorny transition from desktop publishing to a software and services orientation — issued a similar warning. President Robert Weiler said the company is looking at a loss in the neighborhood of $2.9 million for the quarter ended June 30.

■

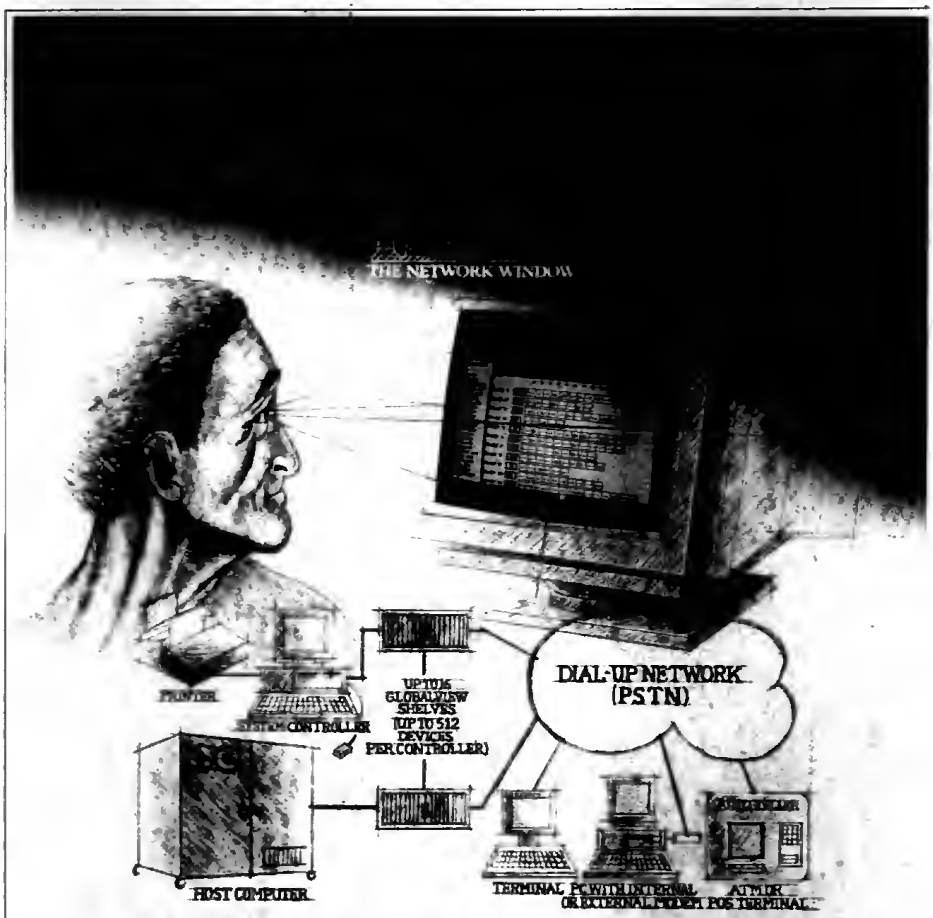
. . . And still more

Workstation connectivity products vendor **Microcom, Inc.** last week announced a downward readjustment in its earlier announced earnings and revenue figures for the fourth quarter and year ended March 31. The company pointed to distributors' overstocking in the fourth quarter as largely responsible for the approximately $3.5 million downscaling of revenue.

■

The flip side

On the other hand, the flood of announcements of expansions abroad or further abroad continues unabated. Among the latest are Arlington, Va.-based software and services provider **American Management Systems, Inc.**, which recently opened offices in Frankfurt, London and Brussels, and Boulder, Colo.-based **Exabyte Corp.** in Houten, Netherlands.



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BDM

CONTINUED FROM PAGE 97

1990 cost budget for the project.

"We're absolutely happy with the program now," said Col. Gary McMahon, Air Force program manager. "Cost-wise, performance-wise, I'll put this up against any [project] in the country." He said the program is the ninth-largest software development program in the U.S. Department of Defense, and it has the best error rate of the lot.

Filteau attributed the turnaround to three key elements, which he put into place in 1986. The first was a move from haphazard to rigorous use of computer-aided software engineering (CASE) tools and with that a strict adherence to design and development methodologies. BDM uses Excelerator, a front-end CASE analysis and design tool from Index Technology Corp., interfaced to Ventura, a desktop publishing environment from Xerox Corp.

Out, too, went a common mind-set in which brilliant but eccentric technicians were allowed to become the keystones of systems development projects. Those who were not team players were fired.

Last, and perhaps most important, Filteau reorganized the project into six product teams of 10 to 12 people, each oriented toward designing, programming and testing discrete software deliverables averaging about 100,000 source statements. He scrapped the common practice of organizing projects by function, in which an analysis group hands off work to a design team, which later passes it on to a programming staff. Each team member was expected to become a sort of Renaissance person, able to design and code with equal facility and expected to stay with the product from concept through delivery.

A systems integration group was put in place under the product teams. It had responsibility for systemswide functions such as database design, common user interface software and system testing. The last leg of the project triad consisted of a financial management group that tended to issues of cost, configuration management and quality assurance.

Filteau acknowledged that the changes were hard for some to swallow. "We invited them to leave," he said.

McMahon agreed that the new project structure made a big difference. "The primary problem was we weren't taking a team approach. Now we've managed to bring all the people together in a cooperative mode; we cooperate right down to the sharing of financial data," he said.

Do as the Japanese do

Filteau repeatedly referred to his team approach as Japanese-like, one in which group performance is emphasized over individual contribution. "Most people in this field [in the U.S.] are still looking for the technological improvement, the silver bullet. They have difficulty accepting the Japanese approach. They admire Japanese robots but not Japanese organizational strategies and philosophies."

Would-be silver bullets such as fourth-generation languages, code generators and CASE tools can be helpful, but none is as important as the relatively mundane organizational considerations, Filteau said.

BDM is currently evaluating the suitability of the techniques employed in the huge Air Force project to the firm's more modest efforts.

"We know for sure this works on big projects," Filteau said. "We don't know if it works on small ones. You don't need a critical path network if you're building an outhouse. You need it if you're building the Chrysler Building."

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EXECUTIVE CORNER

Cognos names new president

Jeffrey P. Papows is the new president and chief operating officer of software vendor **Cognos, Inc.** Papows, who joined Cognos nine months ago as senior vice-president of operations, came to the Ottawa-based firm from Cullinet Software, Inc., where he served as vice-president of marketing prior to Cullinet's acquisition by Computer Associates International, Inc. Cognos Chairman and Chief Executive Officer **Michael Potter** credited Papows with a major role in Cognos' recent gains in market clout and financial strength.

Fiber Distributed Data Interface (FDDI) start-up **Synernetics, Inc.** in North Billerica, Mass., has appointed **Allan Wallack** president and CEO. Wallack was formerly COO of Cognex Corp., a manufacturer of machine vision systems. Synernetics founder **Bruce McClure** has been named chairman and chief technical officer of the firm, which introduced management software for 100M bit/sec. FDDI local-area networks in February.

Fred B. Cox, founder, chairman and CEO of Costa Mesa, Calif.-based **Emulex Corp.**, last week announced that he will cede his executive duties, remaining actively involved in Emulex through his role as chairman. During the search for Cox's successor, which the company said it expects to conclude by the end of the year, veteran industry executive, Emulex board member and consultant **David Hanna** will serve as president of the 12-year-old computer enhancement products vendor.

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Mentors can lend an edge

Merrill Lynch's IS group earned a big return on investment in counseling

BY JAMES LAWLER
SPECIAL TO CW

Information systems professionals looking for an advantage in pursuing career goals should consider acquiring a mentor.

While many business professionals view a mentor as a prerequisite to success, IS people often assume technical skills alone will keep them marketable. But with today's corporate downsizings and reorganizations — and a slower pace of salary growth and promotion — it may be time to rethink this strategy.

Simply defined, a mentor is a colleague who volunteers to serve as a career counselor. A good mentor listens sympathetically, counsels on career moves and serves as a sounding board. A senior-level mentor may even be able to create career opportunities.

Your mentor will typically be in the same organization as you but in a separate line of report. (There are exceptions: Your manager may be your mentor — and a good one.) Ideally, the relationship is not forced; you are comfortable with your mentor, and he is comfortable with you.

Whether mentoring is formal or informal, the contacts often come in a social rather than business setting. Typically, talk takes place over breakfast, lunch or cocktails or at an organizational outing such as a picnic or sporting event. Discussions can last anywhere from several minutes to several hours; the quality of the conversation is more important.

Individuals may benefit from different attributes in a mentor — an unusual career path, a similar background or a reputation for success, to name a few.

Once you have found a willing and able mentor, it is time to get down to business. Questions an IS professional may pose to a mentor include the following:

- Should I be on a managerial or technical career path? Should I chart a course to a user organization?
- What new systems should I support? What new technology should I be learning to be more marketable or promotable?
- What schooling should I pursue? What training in career development and personal skills should I be receiving?
- What tactics help with troublesome peers or users?
- How can I get transferred from an unsupportive manager without turning him off?
- How should I respond to headhunters? Should I pursue internal job postings?
- What networking practices should I be using? With whom?
- Should I abandon ship when the organization is downsizing? Should I wait 18 months for a raise after a tough year?

For IS people just starting their careers, a mentor can teach the unwritten cultural or political norms of the organization. Without this understanding, IS people will not be successful, regardless of technical abilities.

Why not take up these issues with your manager? You ought to, but you may not be comfortable doing so. Also, with the pressures of day-to-day work, your manager may not be available. He may not be adequately skilled at handling such questions or sufficiently committed to taking them on.

During the past two years, IS professionals in the Advanced Office Systems Group at Merrill Lynch & Co. in New York have pursued a mentoring program. About 50 selected junior and intermediate people chose a senior colleague to provide informal career counseling approximately once per month. The program was in effect when the firm began laying off employees as a result of the 1987 stock market crash.

Most of the participants note benefits in setting career goals and addressing the layoffs. Most also say the program prompted them to pursue training in technical topics or in areas such as presentation skills, political acumen, time management and dealing with stress.

One participant says the program boosted his confidence in his talents, forced him to rethink his career and taught him specific methods for attaining goals. It also helped him to identify things that could make his work environment more comfortable. He says he plans to take a more active approach toward meeting goals and spur his manager to support him.

In general, participants who have taken the initiative in working with their mentors have gotten the most out of the program. Their enthusiasm has spurred on their mentors.

Mentors can benefit from the process by staying in touch with life in the corporate trenches. They may want to either talk to their proteges about issues uncovered through mentoring or provide these people with similar kinds of advice.

At Merrill Lynch, two-thirds of the participants say they will network with their mentors on career and work issues in the future. Most indicate that pep talks with their mentors have helped motivate them in the face of corporate downsizing.

Mentoring needn't be confined to one individual; over the course of his working life, the savvy IS professional may work with several mentors who can provide appropriate perspectives at various stages.

If your organization sponsors a mentoring program, take advantage of it. If not, find a mentor on your own. The individual must be willing and able to spend the necessary time, and be must take a personal interest in you. But you may be surprised at the number of senior people who will serve as a mentor if you take the initiative to ask.

With the vicissitudes expected of the corporate world in the 1990s, you will need an edge. Mentoring can provide it.

ONE PARTICIPANT SAYS the program boosted his confidence in his talents, forced him to rethink his career and taught him specific methods for attaining goals.

Lawler is vice-president of sales management systems in the Advanced Office Systems Group at Merrill Lynch & Co. in New York.

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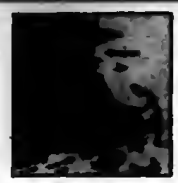

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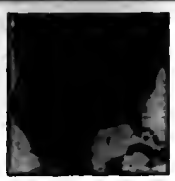

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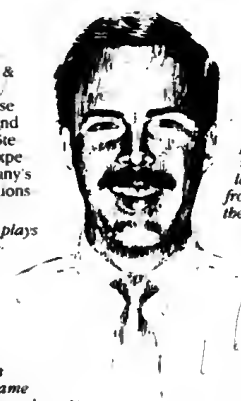

A custom software development company in Norcross, GA, Brannon & Tully, Inc. provides contract programing consulting services to a diverse client base of Fortune 500 companies, utilities, and communications companies. President Steven Tully knows that building a staff of experienced professionals is key to the company's ongoing success in developing solutions based software for specific applications.

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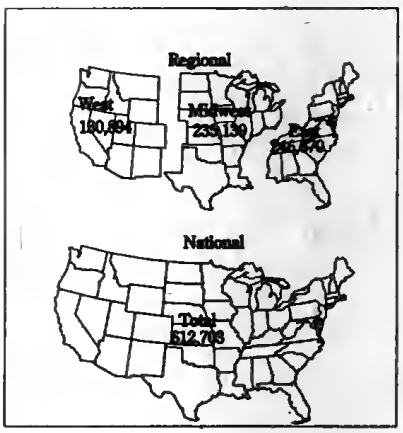

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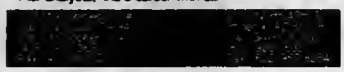

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MARKETPLACE

Looking beyond bank loans

When acquiring systems, leasing is just one of an array of options

BY NEIL ZOBLER
SPECIAL TO CW

Information systems managers whose equipment needs exceed their budgets should know that despite today's uncertain business environment, there are plenty of dollars available when bank loans are not an option.

The uncertain environment means corporate cash reserves are becoming unavailable for spending on equipment at many companies. In such situations, the usual response is to get a bank loan. Unfortunately, many banks are suffering from bad investments in Latin American and U.S. real estate, among other areas. The press reports restrictive credit policies and the inability of small and medium-size companies to get loans. When a bank does say "yes," it can be at a premium interest rate.

Leasing offers one alternative to conventional bank financing. The Tax Reform Act of 1986 put leasing back into the financial limelight; *The Wall Street Journal* has called it a "surprise loophole" that firms expect will save them millions of dollars under the new tax law.

Although there are literally hundreds of leasing structures, from a lessee's accounting standpoint they fall into two categories: operating leases and capital leases.

Operating leases — also known as tax leases — are "off-balance-sheet financing" because neither the debt obligation nor the asset is listed on a company's balance sheet. Capital — or nontax — leases are like conditional sales contracts, with the equipment reflected on the balance sheet and depreciated by the user.

Simply stated, operating leases and a hybrid variety known as true leases are term rental agreements; they result in tax-deductable expenses rather than capitalized assets. These pretax expenses can improve a company's cash flow and cut its tax obligation, especially if it qualifies for the Alternative Minimum Tax.

Leasing can also offer more flexibility than conventional bank loans. Lease payments can be tied to a company's cash flow and revenue projections through "skip payment leases" and "step leases," under which monthly payments can be skipped or stepped up or down.

Tight money hasn't crimped lessors to the same extent as banks, although it is starting to push up their rates. There are, however, other financial intermediaries that play important roles in generating the cash needed to invest in new projects.

- **Asset-based lenders** typically provide funds for projects using unattached assets of a company as additional collateral. The assets might be accounts receivable or inventory. A related technique is the sale-leaseback, in which a finance or leasing firm provides cash by buying working assets from a company and leasing them back.
- **Factors** can provide an interesting alternative for a company that wants to sell some of its accounts receivable rather than borrow money. A factoring house normally buys uncollected accounts receivable at a discount and assumes the responsibility for collecting them.
- **Investment bankers and merchant bankers**, who solicit funds from institutional and private investors, are instrumental in raising working capital. Merchant bankers typically invest some of their own funds in the projects; investment bankers usually invest other people's money. However, unless your financing needs exceed $500,000, you probably will not attract a lot of interest from these players.
- **Venture capitalists** are another important source of funds. However, their potential clients are sometimes surprised by the return on investment they expect to realize; it can range from 30% to 50% per year over five to seven years. This financing normally includes demand registration rights, which allow the venture capitalist to force the client to go public under specified conditions, possibly leading to a change of control.
- **Junk bonds and other commercial paper** have been major sources of working capital in recent years. Unfortunately, the collapse of financial powerhouse Drexel Burnham Lambert, Inc. has eroded investors' confidence in these vehicles. Companies that offer products or services with socially responsible appeal — on the basis of environmental concerns or social problems — enjoy access to many sources of subsidized loans and other forms of low-interest financing.
- **Small business investment corporations** are private investment companies that leverage their own capital with low-interest government money to make loans. The loans can be subordinated to other financing, which becomes important when a firm is negotiating for additional sources of working capital.
- **Community development corporations** are quasi-government organizations that help administer federal, state and county lending. Their loans are often available at below-market interest rates to companies that will improve an area by creating additional jobs.
- **Industrial development authorities** can also administer low-cost state loans to manufacturing companies expanding or moving into a particular area.

Finding available financing as bank loans get harder to come by can be an interesting task, albeit a challenging one. It may help to bear in mind economist Milton Friedman's comment that the press has reported predictions of seven of the past two recessions.

Zobler is managing director of International Equity Co. in Danbury, Conn., which provides leasing and financing services to computer resellers.

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AT Model 239	$1,075	$1,325	$700
AT Model 339	$1,200	$1,400	$900
PS/2 Model 50	$1,300	$1,700	$1,050
PS/2 Model 60	$2,500	$2,600	$2,400
Compaq Portable II	$1,475	$1,725	$1,400
Portable III	$2,175	$2,500	$1,900
Portable 286	$1,500	$1,875	$1,300
Plus	$675	$750	$650
Deskpro	$825	$900	$800
Deskpro 286	$1,400	$1,625	$1,300
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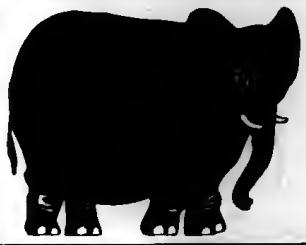

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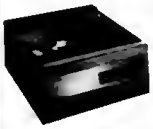

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TRAINING

The diplomacy of training

Understanding organizational cultures makes for effective instruction

BY NAOMI KARTEN
SPECIAL TO CW

Books and courses are popping up everywhere to educate businesspeople about cultural differences among the nations in which they might operate. Although it is less of an "in" topic, it's important for information systems professionals to understand the range of cultures among and within organizations.

This subject is particularly important for IS trainers; they should be able to work more effectively with IS professionals and users throughout their organization if they are sensitive to differences in corporate culture.

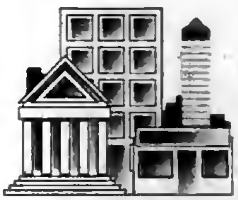
Corporate culture involves the traditions, norms, rituals, shared values and patterns of behavior encouraged in an organization. In their 1982 book *Corporate Culture*, published by Addison-Wesley, Terrence Deal and Allan Kennedy divided corporate cultures into four groups — tough guy, work hard/play hard, bet-your-company and process — and described the differences in personalities, styles, rhythms and values of each.

Such categories are helpful, but large companies are not that simple; few of them have only one culture. IS trainers must avoid regarding users as a homogeneous group with identical attitudes and modes of operation. Divisions, departments, project teams and individuals have their own styles and values.

Similarly, within an IS organization there can be differences among systems developers, operations staffs, technical support groups, information centers — and trainers.

One can become more aware of an organization's culture by thinking about its pace, cohesiveness, style of decision-making and level of information sharing. For example, one might ask the following:

- Is the pace constantly frenzied, or does it suggest an afternoon snooze?
- Is there a sense of cohesiveness between areas so that everyone works toward common goals, or is there a subtle — or not so subtle — tendency toward adversarial relationships?
- Does the organization encourage instant decisions, or does it analyze alternatives endlessly? Does it examine long-term consequences of decisions or encourage short-term thinking?



- Do managers openly share information with their superiors, peers and subordinates, or is everything kept hush-hush, with information doled out only to those who need to know (and even then, not always)?

One can raise similar questions about the organization's attitude toward change, new ideas, risk taking, goal setting and teamwork. It is also appropriate to ask how the organization treats its customers, employees and other constituencies.

Another way to get a grasp of an organization's culture is to identify adjectives or phrases that best describe it. In a recent class, students from several organizations came up with terms that included slow and steady, political, quick on the draw, stimulating, carefree, bureaucratic, full of energy, under constant pressure and free-spirited.

The similarities and differences in lists that several people from the same organization draw up can say a lot about that organization. An organization described as both lackadaisical and energetic probably has difficulty getting departments working together toward common goals.

A related method of characterizing an organization's culture is to ask what its motto might be. For example, see which of the following fits better:

- "Let's try something new" or "Don't make waves"?
- "We stress quality above all" or "We can always fix it later"?
- "We're always here when you need us" or "Don't call us, we'll call you"?

It can be instructive to think about discrepancies between the message an organization sends to customers and its internal culture. For example, does the organization tell customers how important people are while alienating its employees?

With just a slight change in wording, questions about an enterprise can be used to analyze departments or divisions. The units may vary in welcoming or resisting change, encouraging or discouraging creative thinking, requiring rigid adherence to the corporate hierarchy or accepting easygoing relationships in all directions.

For the trainer, knowing that a group likes to jump right in and learn by doing may call for avoiding in-depth analysis of a plan or idea. Similarly, inviting too much open discussion in a group that is used to private conversations — or vice versa — could backfire.

The value of analyzing a group's culture is not in labeling it and thereby pigeonholing it. The value is in facilitating effective working relationships by being sensitive to the differences between and within organizations. Awareness of the variations — whether among countries or within one's organization — can make a big difference in forging these relationships.

Karten is president of Karten Associates in Randolph, Mass., and editor of the monthly newsletter "Managing End-User Computing."

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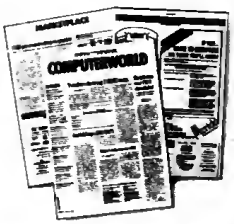

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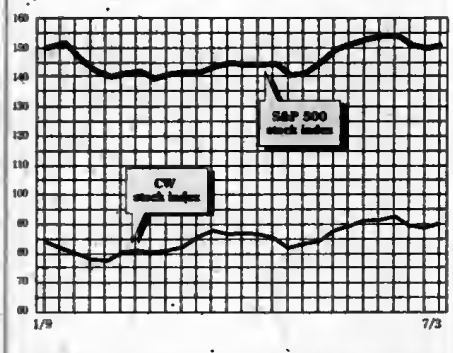
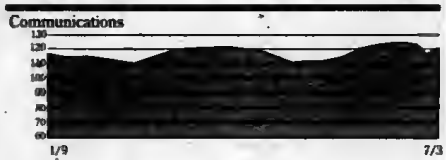
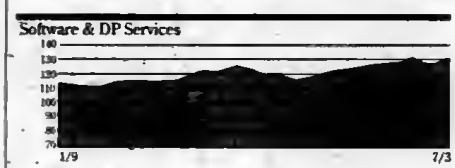
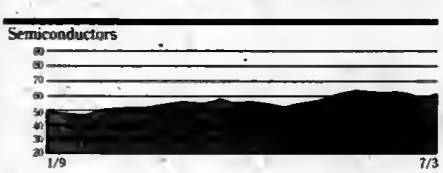
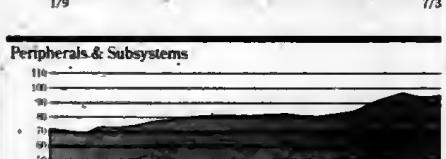


Indexes	Last Week	This Week
Communications	118.4	121.5
Computer Systems	88.1	88.5
Software & DP Services	127.7	130.4
Semiconductors	59.8	61.6
Peripherals & Subsystems	94.8	96.5
Leasing Companies	79.7	78.2
Composite Index	89.0	90.2
S&P 500 Index	150.0	152.1









CW CHARTS

Computerworld Stock Trading Summary

CLOSING PRICES TUESDAY, JULY 3, 1990

E x c h		PRICE 52-WEEK RANGE		CLOSE JULY 3, 1990	WEEK NET CHNGE	WEEK PCT CHNGE
	Communications and Network Services					
N	AMERICAN INFO TECHS CORP	68	50	91	0.4	0.6
Q	ANDREW CORP	28	19	19.25	0.0	0.0
Q	ARTEL COMM CORP	10	5	4.875	-0.1	-2.5
N	AT&T	47	35	38.625	-0.6	-1.3
Q	AVANTEK INC	7	2	2.875	0.0	0.0
N	AYDIN CORP	21	13	14.25	-0.3	-1.7
N	BELL ATLANTIC CORP	57	43	49.75	-0.3	-0.5
N	BELLSOUTH CORP	59	48	53	0.4	0.7
Q	COMPRESSION LABS INC	19	7	14.625	0.4	2.9
Q	CONTEL CORP	37	25	27.625	1.6	6.3
Q	DATA SWITCH CORP	9	2	3.5	0.5	16.7
Q	DIGITAL COMM ASSOC	27	17	23.125	0.4	1.8
Q	DYNATECH CORP	21	15	16.25	0.3	1.9
Q	FIBRONICS INTNL INC	13	5	12.125	0.3	2.1
Q	GANDALF TECHNOLOGIES	7	2	3.875	0.4	10.7
N	GENERAL DATACOMM INDS	7	3	3.5	-0.1	-3.4
N	GTE CORP	38	27	32.375	0.4	1.2
Q	INFOTRON SYS CORP	11	3	3.75	0.3	7.1
N	ITT CORP	65	51	57.5	0.5	0.9
N	M/A COM INC	9	3	5.25	0.1	2.4
Q	MCI COMMUNICATIONS CORP	49	31	42.5	1.5	3.7
Q	NETWORK EQUIP TECH INC	34	9	9	0.0	0.0
Q	NETWORK SYS CORP	15	7	14.125	0.5	3.7
N	NORTHERN TELECOM LTD	30	18	28.375	1.1	4.1
Q	NOVELL INC	57	24	53.75	0.5	0.9
N	NYNEX CORP	92	75	82.75	0.3	0.3
N	PACIFIC TELESIS GROUP	52	40	44.125	0.0	0.0
A	PENRIL CORP	9	4	8.25	1.8	26.9
N	SCIENTIFIC ATLANTA INC	29	18	27.75	1.1	4.2
N	SOUTHWESTERN BELL CORP	59	50	54.25	0.3	0.5
Q	3 COM CORP	18	10	16.375	0.0	0.0
N	US WEST INC	41	33	38.5	0.6	1.7
	Computer Systems					
Q	ALLIANT COMPUTER SYS	9	4	6.438	-0.9	12.7
Q	ALPHA MICROSYSTEMS	9	3	3	-0.1	-4.0
Q	ALTOS COMPUTER SYS	9	5	7.375	0.0	0.0
A	AMDAHL CORP	17	11	17.125	1.4	8.7
Q	APPLE COMPUTER INC	50	32	44	2.5	6.0
Q	AST RESH INC	26	7	23.25	0.8	3.3
N	BOLT BERANEK & NEWMAN	9	4	5.125	0.5	10.6
N	COMPAQ COMPUTER CORP	130	73	123.125	3.8	3.1
Q	COMMODORE INTNL	14	9	6.125	0.5	8.9
N	CONTROL DATA CORP	25	19	19	0.6	3.4
N	CRAY RESH INC	61	31	44.875	-1.6	-3.8
Q	DAISY SYS CORP	5	0	0.156	0.0	0.0
N	DATA GEN CORP	19	9	9.25	-0.1	-1.1
N	DATAPOINT CORP	6	2	2.25	-0.5	-18.2
Q	DELL COMPUTER CORP	13	5	12.375	1.0	8.8
N	DIGITAL EQUIP CORP	103	70	83.75	1.6	2.0
Q	FLOATING POINT SYS INC	4	0	3	0.1	4.3
N	HARRIS CORP	40	26	34.25	-0.1	-0.4
N	HEWLETT PACKARD CO	58	40	47.875	1.6	3.5
N	HONEYWELL INC	103	73	102.125	4.8	5.0
N	IBM	122	93	117.625	-0.4	-0.3
Q	INFORMATION INTL INC	18	12	13.125	0.0	0.0
Q	IPL SYS INC	14	5	10.5	0.0	0.0
N	MAI BASIC FOUR INC	7	2	2.25	0.5	12.5
N	MATSUSHITA ELEC INDL LTD	180	123	161	0.5	0.2
Q	MENTOR GRAPHICS CORP	26	14	17.625	-4.6	-20.8
N	NBI INC	.3	0	0.344	0.0	0.0
N	NCR CORP	72	53	64	0.5	0.4
Q	PYRAMID TECHNOLOGY	36	10	29	-0.5	-1.7
Q	SEQUENT COMP SYS INC	34	11	29.75	-0.8	-2.5
Q	SUN MICROSYSTEM INC	34	13	33.125	0.8	2.3
Q	SYMBOLICS INC	2	0	0.438	-0.1	-12.4
N	TANDEM COMPUTERS INC	30	17	23.625	0.0	0.0
N	TANDY CORP	49	30	36.375	0.6	1.7
N	ULTIMATE CORP	11	5	7.625	-0.1	1.6
N	UNISYS CORP	25	12	13.5	0.5	3.8
A	WANG LABS INC	6	4	4.125	-0.1	-2.9
	Software & DP Services					
Q	AMERICAN MGMT SYS INC	18	11	17.625	0.0	0.0
Q	AMERICAN SOFTWARE INC	27	14	26	0.6	2.5
Q	ANACOMP INC	7	2	2.625	-0.1	-4.5
Q	ANALYSTS INTL CORP	21	14	20	0.8	2.6
Q	ASHTON TATE	18	9	12.625	1.3	11.0
Q	ASK COMPUTER SYS INC	15	7	8.75	0.1	1.4
N	AUTO DATA PROCESSING	59	40	56.375	1.5	2.7
Q	AUTODESK INC	56	33	54	0.5	0.9
Q	BMC SOFTWARE INC	20	13	26.25	-0.5	-1.9
N	BUSINESSLAND INC	14	7	7.75	-0.1	1.6
Q	CADMUS INC	9	4	8.25	0.6	7.2
N	COMPUTER ASSOC INTL INC	20	11	19	0.6	4.1
Q	COMPUTER HORIZONS CORP	16	7	13.5	0.8	5.9
N	COMPUTER SCIENCES CORP	56	40	45.75	-0.9	1.9
N	COMPUTER TASK GROUP INC	14	9	10.125	0.0	0.0
Q	COMSHARE INC	25	15	24	1.3	5.5
Q	CORPORATE SOFTWARE	15	8	14	0.5	3.7
N	GENERAL MTRS (CLS E)	37	24	34.625	-0.8	-2.5
Q	GSA SYSTEMS INTL	18	10	15.75	-0.75	-4.6
Q	HOGAN SYS INC	7	4	3.75	0.3	7.1
Q	INFORMIX CORP	17	8	15.625	0.4	2.5
Q	INTELLICORP INC	6	3	7.75	1.1	17.0
Q	LEGENT CORP	22	19	26.5	-1.0	-3.6
Q	LOTUS DEV CORP	39	21	34.5	-0.5	-1.4
Q	MICROSOFT CORP	79	26	72	-4.3	-5.6
Q	NATIONAL DATA CORP	28	13	15	1.0	7.1
N	ON LINE SOFTWARE INTL INC	11	8	9.75	1.1	14.8
Q	ORACLE SYS CORP	188	15	22.625	0.3	1.1
N	PANSOPHIC SYS INC	19	10	14.25	0.9	8.5
Q	PHOENIX TECHNOLOGIES INC	11	2	4.5	0.0	0.0
Q	POLICY MGMT SYS CORP	42	28	41.25	0.4	0.8
Q	PROGRAMMING & SYS INC	25	16	24.25	1.3	5.4
Q	RELATIONAL TECH INC	11	5	6.5	0.1	2.0
N	REYNOLDS & REYNOLDS CO	27	19	20.75	-0.3	-1.2
Q	SAGE SOFTWARE INC	18	7	13.625	-0.3	-1.8
Q	SEI CORP	21	15	21	0.6	3.1
Q	SHARED MED SYS CORP	17	12	12.625	-0.6	-4.7
Q	SOFTWARE PUBS CORP	28	13	23.625	-1.1	-4.5
N	STERLING SOFTWARE INC	11	7	10.5	0.4	3.7
Q	SUNGARD DATA SYS INC	26	16	24.25	1.5	6.6
N	SYSTEM CENTER INC	26	17	22.125	0.6	2.9
N	SYS. SOFT INC	29	15	27.25	2.5	10.1
Q	WORDSTAR	2	1	1.125	0.0	0.0
	Semiconductors					
N	ADV MICRO DEVICES INC	11	7	9.5	0.4	4.1
N	ANALOG DEVICES INC	11	7	7.375	-0.1	-1.7
Q	ANALOGIC CORP	11	6	8.5	0.1	1.3
Q	CHIPS & TECHNOLOGIES INC	28	15	21.25	0.8	3.7
Q	INTEL CORP	46	28	47.5	1.6	3.5
Q	MICRON TECHNOLOGY INC	19	7	13.75	1.5	12.2
N	MOTOROLA INC	68	51	66.5	2.4	2.9
N	NATL SEMICONDUCTOR	9	5	7.25	0.4	5.5
N	TEXAS INSTRS INC	44	28	39.25	0.3	0.9
A	WESTERN DIGITAL CORP	16	6	13.5	0.3	1.9
	Peripherals					
Q	ALLOY COMP	2	0	0.782	0.0	-3.8
N	AM INTL INC	6	2	2.5	0.0	0.0
Q	AUTO TROL TECH CORP	9	2	3.75	-0.3	-7.7
Q	BANCTEC INC	24	13	20.29	1.1	5.9
4	CGCINTRONICS CORP	6	3	3.75	0.1	2.2
Q	CONNER PERIPHERALS	28	10	28	2.0	7.7
4	DATARAM CORP	20	6	18.5	1.5	8.8
N	EASTMAN KODAK CO	52	36	41	1.6	2.9
N	E M C CORP MASS	7	5	5.75	0.3	4.5
Q	EMULEX CORP	9	4	7.25	0.1	1.8
Q	EVANS & SUTHERLAND	35	17	29.5	-0.5	-1.7
Q	ICOT CORP	2	1	1.25	-0.1	-9.1
Q	INTERLEAF INC	9	5	6.75	-0.6	-8.5
Q	IOMEGA CORP	6	3	5	0.1	1.3
Q	LEE DATA CORP	3	1	1.313	0.0	0.0
Q	MASSTOR SYS CORP	4	1	1.188	-0.1	-5.0
Q	MAXTOR CORP	17	7	15.375	1.3	8.9
Q	MICROPOLIS CORP	9	3	7.875	0.9	8.6
N	MINNESOTA MING & MFG CO	88	68	87.625	2.4	2.8
Q	PERSONAL COMP PRODUCTS INC	6	4	4.063	0.0	0.0
Q	PRINTRONIX INC	16	7	12.75	-0.1	-1.0
N	QMS INC	21	6	18.5	1.4	8.0
Q	QUANTUM CORP	23	9	22.5	1.9	9.1
N	RECOGNITION EQUIP INC	13	4	5.25	0.1	2.4
Q	REXON INC	10	6	7.875	-0.4	-4.5
Q	SEAGATE TECHNOLOGY	20	10	14.25	0.6	4.8
N	STORAGE TECH CORP	35	9	34.625	3.5	11.2
Q	TANDON CORP	4	0	3.75	0.9	33.3
N	TEKTRONIX INC	23	12	16.125	1.0	6.6
Q	TELEVIDEO SYS INC	1	0	0.344	0.0	-8.3
N	XEROX CORP	89	49	46.375	-0.6	-1.3
	Leasing Companies					
N	CAPITAL ASSOC INTNL INC	8	3	3.125	-0.1	-3.8
N	COMDISCO INC	34	17	18.125	0.3	1.4
Q	LDI CORPORATION	16	13	19	0.5	2.2
Q	PHOENIX AMERN INC	6	3	3.75	-0.1	-3.2
Q	SELECTERM INC	9	5	6	-0.6	-9.1

EXCH: N—NEW YORK; A—AMERICAN; Q—NATIONAL

Skid row

Tech firms finish short week by posting a long trail of losses

Wall Street's bifurcated holiday week was no time for celebration. While skyrockets blasted through the air, technology stocks fizzled and dropped like duds.

An eruption of negative earnings forecasts sent some stocks plunging, including Mentor Graphics, Inc., which lost 5 points to close at 16¼ Thursday. Microcom Corp. plummeted 3⅛ points to 6⅛ after predicting a higher quarterly loss. Interleaf, Inc. and Alliant Computer Systems Corp. also suffered the fate of unfavorable financial news. Interleaf lost 1¼ points to 6⅝, and Alliant slipped 1⅝ points to 6¼.

Victorious in its copyright suit against Paperback Software International, Lotus Development Corp. jumped on Borland International's back with a similar gripe. Borland's stock took a 4¾-point hit for the week, finishing at 16⅝. The suit didn't fit Lotus' investors, though. Its stock slipped ¼ of a notch to close at 34¼.

Compaq Computer Corp., which had gained 2½ points the week before, lost as many last week, ending at 122. Other hard-luck hardware firms included Apple Computer, Inc., which shed 1¼ points to close at 43½; Digital Equipment Corp., down 1⅜ points to 83⅛; and Sun Microsystems, Inc., slipping ¾ of a point to 33¼.

One bright spot on the hardware scene was NEC Technologies, Inc.'s gain of 1½ points to 66, after unveiling its new superfast mainframe. IBM, scheduled to introduce a comparable machine — nicknamed Summit — this year or in 1991, sank ⅛ of a point to 117⅞, while Amdahl Corp., also planning a similar announcement, edged up ⅝ of a point to 16⅝.

KIM S. NASH

Blind

FROM PAGE 1

employment for the handicapped.

There are many more who are visually impaired, 20 years of ACB surveys have shown.

Totally blind and legally blind programmers and systems analysts who aspire to management are often hampered by the varying degrees of support top IS management provides and the high motivation it takes to overcome the physical obstacles.

Blind IS managers said there is also a lack of "adaptive technology," or special equipment needed to give blind workers access to computers, in many places.

Jim Fleming, president of ACB's Visually Impaired Data Processors International (VIDPI), is another government IS manager who advanced his career against the odds. Fleming, 36, is a supervisory computer specialist in the Internal Revenue Service's (IRS) Treasury Integrated Management Information Systems project. He manages a field staff of 15 that is currently working to convert IRS databases to a new hardware system.

Although partially sighted, Fleming's vision is limited because of a condition that causes the retina to deteriorate. "Many people question the ability of blind people to act as managers," Fleming said. "But I think it's actually easier to be a manager than it is to be a technician, in terms of the disability." That is because programmer/analysts need to write and debug thousands of lines of code, something that most people do visually. As a manager, Fleming finds himself writing memos, reviewing others' work and communicating, rather than writing large programs.

Wearing special glasses and using oversized VDT monitors helps Fleming get his work done, but reading from the screen for long periods causes eye fatigue — and viewing text on oversized screens limits his ability to scan. While he ascended rapidly into management from the ranks of Cobol programmers, he said his case is unusual. "We've made some progress in getting our foot in the door, but most blind people are still getting entry-level positions," he said.

Despite the difficulties, both Fleming and Young said their federal agencies have supported their career advancement. Fleming credited his own rise in the ranks to the support of Dan Cappazzoli, a former assistant commissioner of computer services who retired in 1988. Cappazzoli recruited visually impaired persons as entry-level programmers, Fleming said, hiring more than 50 persons from one Arkansas computer school that specialized in training the blind.

Patricia Barry Levy

ACB's Fleming: *We've made progress, but most blind people get entry-level jobs*

Young, who chairs VIDPI, was a typist in 1968, when the Veterans Administration sent him to a nine-month programming course in Austin, Texas. Five years later, he was named computer specialist, and seven years later, he was named a first-line supervisor.

Personal computer technology has removed many of the most difficult obstacles to blind computer professionals. "Twenty years ago, we had to rig up braille printers and listen to textbooks that had been recorded for the blind," said Michael J. Mady, a professor of computer science at San Antonio College. "Now, we get a lot of information on floppy disks and put it into a PC — where voice-synthesizer software reads it out loud."

Young first became a supervisor in the mid-1970s. At that time, most systems information was printed out in reams of fanfold computer paper. To keep up, Young used to take those printouts home, so that his wife could read the columns of numbers aloud, "walking me through core dumps in an effort to spot errors." There was, he added, "no such thing as an eight-hour day." In 1977, nine years after he began, he became an assistant chief of the systems division, supervising 80 people.

If there were any special problems to managing such a large group, Young did not admit to any. "The others soon learned that I used different techniques to get the job done," he said. "I used tape recorders, braille writers, and I had a secretary to take dictation for memos and reports. After a few days, we all went back to work."

Ingres to sketch out its '90s desktop strategy

BY JEAN S. BOZMAN
CW STAFF

ALAMEDA, Calif. — In a rush to catch up with its relational database management system competitors, Ingres Corp. plans to unveil its desktop strategy for the decade today.

The wide-ranging introductions follow a set of Ingres announcements for the Apple Computer, Inc. Macintosh made two weeks ago.

A new offering called Ingres Server for OS/2 will be mixed in with a number of enhanced products, such as Ingres Tools for DOS. The software tool package, which had been available for Release 5.0 of the Ingres RDBMS, has been updated for Ingres Release 6.0. While not new, the tool package has been vastly improved, according to beta-test users.

Industry analysts noted that Ingres Server for OS/2 supports Release 6.2 of the Ingres RDBMS but lacks the object-management and rules-management functions of Release 6.3. That also means that many features, such as triggers, user-defined functions and data types, are not included in this OS/2 release. Ingres executives confirmed that Ingres for OS/2 conforms with Ingres 6.2. They said programmers are now working on the 6.3 version, but they would not say when it will be available.

The firm also announced support for several personal computer local-area networks, including Novell Corp.'s Netware, 3Com Corp.'s 3+ Open and Microsoft Corp.'s LAN Manager. Before this, users had to link Ingres servers to PCs via Transmission Control Protocol/Internet Protocol, Digital Equipment Corp. Decnet or Ethernet communications protocols. Network support for OS/2 servers is provided on top of IBM's Netbios protocol.

Industry analysts questioned the timing of Ingres' assault on the desktop. "The important thing here is not that they're providing leadership, it's that they're completing the task," said Rich Finkelstein, president of Performance Computing, a Chicago software consulting group. "Before this, Ingres only offered a Unix server solution, even though many corporations wanted an OS/2 version. It may be a technically superior product, but it's being marketed a little late in the game."

"There's no new technology" in the OS/2 server, agreed Nancy McSharry, a senior software analyst at International Data Corp.'s Mountain View, Calif., office. "But Ingres does have a competitive edge, because it implements its tools the same way, no matter what the platform."

Chip Gliedman, Ingres' director of desktop products, conceded that virtually all of his competitors already have OS/2 servers. "They all came out with them in the last 12 months," Gliedman said. "What these products really represent is an expanded focus on desktop products at Ingres. Ingres customers simply didn't have these options before."

The California Department of Water Resources in Sacramento is using the enhanced Ingres Tools for DOS to build a database on equipment and maintenance for the statewide water system. "We found that the first generation of Ingres Tools for DOS [written for Ingres 5.0] constantly failed, but the new one works just fine," systems analyst Afshin Gousheh said.

All the Ingres products are available immediately, Gliedman said. Ingres Server for OS/2 is priced at $1,995; Ingres OS/2 Networking with Netbios support is priced at $495, and Ingres Tools for DOS is priced at $495. Another version of Ingres OS/2 Networking for Novell's SPX/IPX protocol will be available in the fall for $495.

Apple developers find Claris reversal tough to swallow

BY JAMES DALY
CW STAFF

Independent software developers expressed renewed concern about receiving fair treatment from Apple Computer, Inc. last week, only days after the personal computer giant made an abrupt about-face and announced that long-standing plans to turn its Claris Corp. software unit into a separate business had been scrapped.

For two years, Apple officials have pledged to sever ties with Claris because of concerns by software firms that they could not compete with a group so closely tied to Apple. Analysts had expected Claris to go public later this year.

The reversal went down bitterly with many developers and renewed concerns about the stability of Apple's high-level management, which has been rocked by several prominent turnovers this year. "How are we supposed to have confidence in a firm that changes so drastically from day to day and quarter to quarter?" Symantec Corp. President Gordon E. Eubanks Jr. asked.

However, the developers would not say whether Apple's reacquisition of Claris would cause them to scale back their efforts in the Apple market.

Software too crucial

Apple Chief Executive Officer John Sculley said that software will play too important a role in the computer industry to ignore and that Claris will become a wholly owned independent subsidiary.

The decision, however, appears to renege on past promises. Apple officials have maintained that independence was key to Claris' success because it would allow Apple to participate in the applications software market without alienating its third-party developers. International Data Corp. estimated that Claris, in Mountain View, Calif., has grown to an $80 million organization that employs 380 people. Claris produces packages including the Macwrite word processor, the Macpaint graphics program and the Filemaker database manager.

Analysts speculated that had Claris broken away, it would have focused its development efforts on competitive programs such as Microsoft Corp.'s Windows 3.0, which gives an Apple Macintosh-like interface to IBM PCs and compatibles. That could have served to fuel resentment between Apple and Claris.

Only last month, at PC Expo in New York, Claris President Bill Campbell stated that his firm was developing for Windows, and Claris officials have since acknowledged that diversification would have become certain. "Market forces would have dictated that we would have needed to create multiplatform products," said John Zeidler, director of marketing at Claris.

This apparently was the straw that snapped the camel's back. "It would have killed Sculley to see Claris jump on [the Microsoft 3.0] bandwagon," said Charles Rothschild, an analyst at the Jersey City, N.J., office of research firm Pershing & Co.

With separation now a dead issue, developers are keeping their fingers crossed. "It is completely up to Apple how this ball is played," said Mike Maples, vice-president of applications at Microsoft. "There is the opportunity for Apple to be level-handed and fair, and there is the chance for them not to be."

NEWS SHORTS

Gartner Group sold

Information Partners L.P. in Boston last week bought Stamford, Conn.-based market research firm Gartner Group, Inc. from Saatchi & Saatchi PLC for $70 million. Information Partners, a limited partnership specializing in information industry buyouts, bought Gartner Group with the intention of bringing the company "back on its traditional growth record track," said Mark Nunnelly, a general partner at Information Partners. Gartner Group, formerly a subsidiary of publicly held Saatchi & Saatchi, will turn private under the direction of Information Partners.

Mix 'n' match Micro mishaps

Microsoft Corp. said last week that certain combinations of third-party disk partitioning software with Microsoft's Smartdrive disk-caching utility, bundled with Windows 3.0, might result in loss or corruption of data. The risk is greatest with disk partitioning software from Ontrack Computer Systems, Inc., Priam Systems, Inc. and Storage Dimensions, Inc., used in combination with Windows 3.0. Microsoft stressed that of the several hundred thousand versions of Windows 3.0 shipped, only 12 customers have verified problems.

Acer buys Altos

The Acer Group and Altos Computer Systems last week signed a merger agreement under which Altos will become a member of The Acer Group. Acer claimed to be the largest personal computer maker in Taiwan. The transaction, valued at approximately $94 million, has been approved by each company's board of directors. Altos will operate as an independent subsidiary of Acer and continue to market its existing product line of Unix-based multiuser computer systems, as well as introduce new products.

Packet-switching for Moscow

U.S. Sprint Communications Co. will be fostering packet-switched *perestroika* in the Soviet Union under a joint venture announced last week between Sprint International and Soviet carrier Central Telegraph. The two carriers will jointly operate a packet-switching center in Moscow that will provide high-speed data communications, electronic mail and telex services domestically and internationally. The new service, beginning late this year, will support Soviet President Mikhail Gorbachev's recent initiative to bring in U.S. business by ensuring that U.S. firms will get the same level of networking service that they now enjoy in major Western cities, according to a Sprint spokesman. Sprint and other carriers have provided telephone service to Moscow for some time, and Sprint's Telenet subsidiary has provided packet-switched connections to the USSR via a link to Switzerland. However, this will be the first time the USSR has allowed a foreign data networking company to establish a presence there, Sprint said.

Dell adds 486-based model

Dell Computer Corp. last week released the Dell System 433E, an Intel Corp. 1486-based microcomputer that runs at 33 MHz and offers the 32-bit Extended Industry Standard Architecture bus. Austin, Texas-based Dell set prices from $7,899 to $12,199. At the same time, the company dropped prices by $1,500 on the System 425E and the Dell Station 425.

Daewoo plans color Next station

It appears that Next, Inc. has finally given in to pressure to change its all-black-and-white tune. Next Co-founder Steve Jobs has promised a color monitor by the end of this year for his company's workstations, and now Korean PC maker Daewoo Telecom Co. Ltd. is jumping on board the Next color bandwagon. Daewoo says it will have a color display system for the Next computer by sometime early next year. The image processing system will typically sell for between $30,000 and $60,000 and will be distributed in the U.S. by Leading Edge Products, Inc., according to Daewoo officials.

Lotus

FROM PAGE 1

Lotus is unlikely to find much sympathy among accounts that have either switched to Quattro Pro or are evaluating the Borland spreadsheet (see story below). "The suit won't sway my people's evaluations either way," said Brian Ellis, MIS director at Brunswick Bowling & Billiards in Muskegon, Mich. At Charles County Community College in LaPlata, Md., researcher Cynthia Vervena said that Quattro Pro's lower price will outweigh any other concerns. "It's a good deal at $99, compared to Lotus for $495," she said.

Most users contacted last week said they have both 1-2-3 and Quattro Pro in-house. Many preferred the latter, saying it costs less, takes up less memory, requires a less powerful machine and has better graphics and added capabilities. Few were seriously concerned about the suit, although a number criticized Lotus for pursuing its copyright claims.

Pigeonholed

Computer Associates International, Inc.'s Super Calc 5 has already been pigeonholed by analysts as the next target of Lotus' lawyers.

Some analysts, such as Marshall Moseley at Dataquest, Inc., suggested that by the time a decision is rendered in the Lotus vs. Borland and SCO cases, it will be relegated to a footnote, rather than a headline, in history. "The point is, Lotus may have won the battle [copyright ruling] and lost the war [position as the standard interface]," he said.

By as early as 1991, the proprietary advantage of the 1-2-3 interface — as a standard way of interacting with other computer programs — will have begun to fade, said Paul Zagaeski, an analyst at The Yankee Group. "Two years from now, the Lotus menu system will be far less important in the market than it is now," agreed Rick Sherlund at Goldman Sachs & Co., noting that the Borland suit comes at a time when the industry is beginning to move to a new graphical environment. In part because of the Lotus copyright, users and developers may hasten that migration in order to ensure a risk-free, unifying environment for their application families.

Where developers once counted on the Lotus 1-2-3 interface to provide a degree of familiarity and compatibility between packages, they will now look to graphical user interfaces such as Microsoft's Windows, IBM's Common User Access or even Apple Computer, Inc.'s interface.

"I do think Windows will provide a common denominator, although people will be far more careful to make sure they don't copy anyone else's interface features," Sherlund said.

One dissenter is Jeffrey Tarter, editor of "Softletter" newsletter. "There are 10 [million] or 20 million people for whom the Lotus command structure is intuitive. It is unlikely that all these users will abandon this interface," he said.

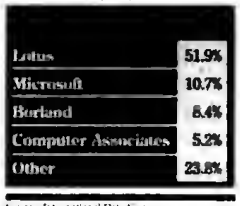
Of course, even in a graphical user interface environment, developers will still be wary of making their product look too much like the next guy's, said David Cearley, a software analyst at Gartner Group, Inc.

Lotus was successful in positioning the 1-2-3 interface as a standard, but the hitch is that it does not license that technology. "They wanted people to write to their interface. They did, and now Lotus is suing," said Adam Osborne, former Paperback chief executive officer. He resigned in mid-February and is still a shareholder.

Conversely, users and developers can license Windows and buy the developer kit or adhere to interface guidelines published by IBM and Apple. "Have [Apple or IBM] ever said they won't sue?" Osborne asked.

King of the hill

Lotus maintains spreadsheet market dominance despite pressure



Source: International Data Corp.
CW Chart: Doreen Dahle

Lotus suit deals blow to Borland ambitions

BY PATRICIA KEEFE
CW STAFF

Borland International could lose newly won corporate accounts if it doesn't move quickly to defuse the copyright infringement suit filed against it last week by Lotus Development Corp.

Anticipating the lawsuit, Borland filed suit first, asking the judge to rule that it does not violate any 1-2-3 copyrights. Borland's Quattro Pro offers the option of using a 1-2-3 menu. It normally retails for $495, but Borland is running an aggressive $99 promotion tied to a 1-2-3 trade-in.

The volley of lawsuits forced Borland's stock price down nearly 20% before rebounding slightly at the end of Thursday's trading.

Most industry analysts said they believe Lotus is using its recent copyright victory over Paperback Software International, Inc. as a competitive weapon.

Insisting that Quattro Pro is not a clone of 1-2-3, Spencer Leyton, Borland's senior vice-president of business development, suggested that "We get from one place to another by what has come before."

Kahn's ***spreadsheet tactics provoked the wrath of Lotus.***

Some feisty Quattro Pro users do not think much of Lotus' copyright claims. "I don't think the Lotus suit is founded," said Douglas Keim, MIS manager at Strout Plastics in Bloomington, Minn. "But I'm not going to buy 1-2-3 in any case; I don't like it."

"I'll recommend that we *not* use 1-2-3," responded Jerry Criswell, a personal computer technician with the Des Moines-based Iowa Credit Union League. "The 1-2-3 people are out of line [with this suit]," he said, adding that his shop moved over from 1-2-3 to Quattro Pro.

Still, Jeffrey Tarter, editor of "Softletter" newsletter, maintains that Borland will find itself in trouble in larger, corporate accounts. "Quattro Pro could get taken off some buy lists," he said.

For example, the Small Systems Technology group at Phoenix-based Best Western International is considering Quattro Pro as a 1-2-3 replacement based on its lower price and added capabilities, according to group manager Cary Theall. But the suit has left those plans uncertain.

The suit pits Lotus Chief Executive Officer Jim Manzi against one of his chief tormentors, longtime Lotus baiter and Borland founder Philippe Kahn. The normally glib Kahn has ignited Lotus' ire in the past through such stunts as anonymously distributing copies of a critical profile of Manzi and targeting 1-2-3 in its advertising campaigns as overpriced.

Repository

FROM PAGE 1

of software development, from the up-front analysis and design to maintenance of production applications. Eventually, it will provide integration for computer-aided software engineering (CASE) tools so they can share data and work under the same guidelines. The guidelines will be provided by the information model, which, put simply, is the blueprint for how development work should be done.

Both companies said they decided to go with an incomplete product rather than wait for a more robust version because they wanted to stay as current with IBM's steps as possible.

"Our plan was that, regardless of its state, we wanted it to begin the migration to it," said Howard Sorgen, a first vice-president and director of information and technical services at Merrill Lynch. "We never saw from Day 1 any need to hedge on decisions in terms of application development."

The only major gripe concerned pricing, which is steep for an incomplete product, said Neil Ferri, a Merrill Lynch vice-president in charge of data services and information security. Ferri said his staff is installing the official Version 1, which became generally available at the end of last month with a monthly licensing charge of $4,500 for high-end processors.

"My first impression is [the pricing] is out of line, and I plan to pursue it with IBM," Ferri said. "It should be going at about 25% of the price, because it has about 25% of the functionality."

The current version, according to the early users, provides no integration with third-party tools. It is also slow and a resource hog, according to Ackerman. "I'm used to subsecond response time on [IBM's] TSO," he said. "It doesn't have anywhere near that. If you have to wait 15 to 30 seconds for something, it seems like forever."

However, Ackerman said he considers that to be a normal drawback to a new release that he expects will improve with time.

"The performance could be improved, but I'm convinced IBM will do that," Ackerman said. "We were an early support site for DB2 and the first version of it had horrible performance. Now, it is reasonable to talk about it as a transaction processing database."

The lack of tool integration requires users such as Depository Trust to go without user-friendly access methods. It is the CASE tools that will deliver graphical user interfaces. For now, users must rely on terminal-based access.

Depository Trust is using IBM's Query Management Facility, which Ackerman said provides a "fairly nice interface." Merrill Lynch has not yet begun loading models into the software.

Depository Trust is currently loading information from its own corporate model into Repository Manager. Ackerman said the model, which took four years to build and exists mostly on paper, can be loaded into the repository with its batch loader interface. The data has to be set up according to IBM guidelines, or Repository Manager will reject it. Once formatted properly, "it's textual information, so we dumped it straight in," Ackerman said.

Tricky moves

Merrill Lynch, however, is working with data in existing repository-like products, which makes the move to IBM's software a bit trickier. The company is using both the dictionary product developed by Brownstone Solutions, Inc. as well as the encyclopedia component of Knowledgeware, Inc.'s Information Engineering Workbench. As a result, Merrill Lynch has to spend more time up front making sure its existing ways of handling data match Repository Manager methods. "We've spent far more time reviewing the printed material and the information model," Ferri said. "Our intent is to take our existing repository and get it to fit the [guidelines] published for Repository Manager."

Ferri said the existing products provide more functionality than Repository Manager. "We have enterprise models, physical models, logical models," he said. "We can trace anything from a high-level business function all the way down to the code function. Repository Manager is not capable of doing that."

CA seeking to be a crowd pleaser

Welcomes IBM and DEC repository strategies while trying a hand at its own

BY JOHANNA AMBROSIO
CW STAFF

Opting to play both sides of the application development field, Computer Associates International, Inc. last week outlined a plan to embrace both IBM's and Digital Equipment Corp.'s repository strategies while introducing an alternative of its own.

CA said its software strategy will provide for coexistence among IBM's Repository Manager, DEC's CDD Plus/Repository and a CA repository running on either vendor's machines.

Separately, CA said that it will bring out a full line of commercial Unix systems software, database management systems and applications (see story below). The CA strategy means that users can keep their existing DBMSs and still take advantage of repository approaches. Under the CA mix-and-match scheme, database systems from IBM and DEC as well as CA's own will eventually be able to work with the repositories from all three companies.

Over the next year, CA plans to roll out interfaces between its DBMSs and other software to the IBM and DEC repositories. CA's repository — based on its existing data dictionaries — will include some of IBM's repository model.

However, it will also feature CA's own data center model. As the IBM repository will include facilities for storing models of how the business enterprise operates, CA's repository will allow users to define how they want their data center to operate, according to CA officials.

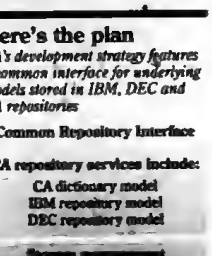
Users welcomed the move toward CA compatibility with IBM and DEC. "To us, the bottom line is, we won't be disrupting operations as we migrate to the new repository," said Jim Wegmann, senior vice-president of corporate data processing at Talman Home Federal Savings & Loan Association of Illinois in Chicago. The company has not yet selected its DBMS or the repository it will use, but the CA strategy "allows us to make a case-by-case transition, and that's important."

New York University is currently using CA's IDMS as its only DBMS. "But this might open other options for us," said Karen Travis, assistant director of administration at the school's University Computing Center.

For example, "we might be able to take a piece of our existing database — financial aid or admissions, for example — and put it on another computer dedicated to that function," she said.

Here's the plan

CA's development strategy features a common interface for underlying models stored in IBM, DEC and CA repositories



Source: Computer Associates International, Inc.
CW Chart: Doreen Dahle

To implement all this, CA is working on something it calls the Common Repository Interface (CRI), which will act as a level of intelligence to "populate, navigate and maintain the information" in any of three repositories — DEC's, IBM's or CA's.

CRI will incorporate the applications programming interfaces (API) used by both IBM's and DEC's repositories. APIs define how third-party software can communicate with the IBM and DEC repositories.

Because CA will use the same interfaces into the DEC and IBM repositories as other third-party vendors, users should be able to mix and match other vendors' software with the CA repository, according to the company.

In the short term, however, users will be somewhat limited in their ability to truly mix and match. For example, a DEC DBMS will be able to access the DEC or CA repositories but not the IBM repository. And a CA or IBM DBMS — but not one from DEC — will be able to access the IBM repository.

Any-DBMS-to-any-repository functionality is not slated to be available for the next several years. "That requires a distributed repository, and that's down the road a bit," according to George van Schaick, CA's vice-president of information systems marketing.

In addition to building the IBM and DEC bridges from its two main DBMSs, CA will also "link a wide range of our software into DB2 and Repository," said Anders Vinberg, CA's senior vice-president of research and development.

This other software includes CA's application development tools, such as fourth-generation languages and expert systems, and applications themselves, such as accounts payable.

CA's own repository will evolve from the current data dictionaries in the company's IDMS and CA-Datacom DBMSs. This means extending the content of the dictionaries to include computer-aided software engineering definitions for enterprise modeling, analysis and design as well as life-cycle management.

CA's repository can be "a replacement for or a user of" DEC and IBM repositories, Vinberg said.

All in the family

Computer Associates plans to bring out an entire family of commercial Unix products over the next several years, including applications, systems management products, database products and information management software.

While the company has not formally announced any new Unix software, CA is preparing a statement of direction for release sometime this summer, a CA executive told *Computerworld*.

CA already has some Unix packages directed at the scientific/technical market. But "we'll make available much of our software on Unix," said Anders Vinberg, CA's senior vice-president of research and development. Generally, after a package has been introduced for the IBM mainframe market, it will come out for Digital Equipment Corp. VAX machines and then for Unix. "You won't be seeing any products for Unix before they're out on the VAX," Vinberg said.

Two Unix packages that CA is readying are an SQL-compatible database management system and a code generator.

JOHANNA AMBROSIO

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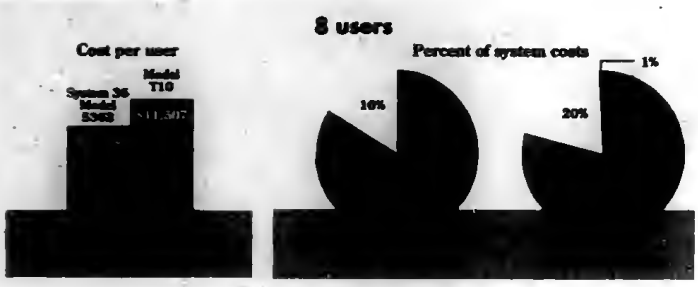
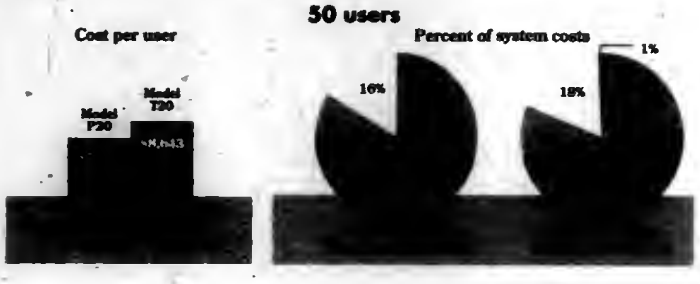
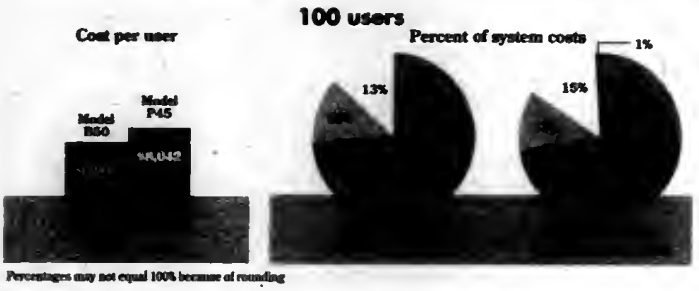
TRENDS

Cost of ownership

Peripherals will likely make up the greatest share of total system costs over a five-year period for AS/400s purchased in 1989 and 1990







Percentages may not equal 100% because of rounding

Source: The Sierra Group, Inc., Tempe, Ariz.

CW Chart: Tom Monahan

INSIDE LINES

People unclear on the concept

After Borland International's stock dropped from 21 June 29 to 15¾ last Tuesday, the company scheduled a conference call with Wall Street analysts, ostensibly to practice a little spin control. Unfortunately, Borland Chairman Philippe Kahn spun himself out of control, a source reported. "Philippe lost his cool," the source said, explaining that Kahn's answers to most questions amounted to, "I'm not a lawyer, don't ask me." The stock price has continued to drop.

A steak in their future

IBM and 3Com will announce a joint development agreement at the prestigious 21 Club today (so we know they are taking it seriously). The pact is expected to focus on standards in OSI and network management for local-area networks.

Plenty of RTs, though

Unless you've already got your order in for IBM's RISC System/6000 workstation, don't expect to get your hands on one until at least the end of the year. Although the company is producing between 500 and 1,000 machines per week, "everything is sold out, and we question our ability to build as many machines as we're getting orders for," an IBM spokesman said recently. General availability of the machines began in late May. The best seller so far: the entry-level Powerstation 320, which has accounted for 60% of sales.

Hack 'til you drop

A group headed by Mitch Kapor, founder of Lotus and chairman of On Technology, will hold a news conference tomorrow morning in Washington, D.C., to formally announce the formation of a hacker defense team. The team, which also includes Grateful Dead lyricist John Barlow and two well-known law firms, plans to muster its resources to provide legal and financial assistance to computer hackers who have been accused by federal and state law enforcers of carrying out a variety of computer-related crimes.

Sharing the wealth

DEC reportedly is preparing to announce eight new supporters for its Enterprise Management Architecture network management platform — including Microsoft and Apple — but could not quite get the act together in time for Decworld '90, which begins this week. One star that might actually make curtain time this week is DEC's announcement of support for Microsoft OS/2 LAN Manager servers under its highly strategic Network Application Support (NAS) architecture. This would actually allow other vendors' LAN Manager-based systems to share the limelight with VAX VMS as NAS servers — amazing, if true.

Equal file access

IBM is working on a voice-output version of its OS/2 Presentation Manager graphical user interface that can be used by visually impaired people. The work, under way at IBM's Yorktown Heights research center and at its Boca Raton, Fla., PC product center, is expected to result in a beta-test version by year's end. Computer users at the American Council of the Blind convention in Denver last week were angry that IBM's new graphical user interface strategy leaves them stranded. Most special computer equipment for blind users, including voice-output software, is adapted for use only with DOS. "We need to make sure that as this windowed environment starts to take over, we have access for our blind people," said ACB President LeRoy Saunders.

All the suits emanating from those spreadsheet funsters in Cambridge, Mass., have tickled the fancy of Forrester Research analysts. When we caught up with Forrester's William Bluestein last week, he was busy pondering the possibility that Lotus will next sue Novell Chairman Ray Noorda for making Lotus look and feel bad. We can't help wondering if Lotus' next target will be all the PC game companies that build a fake spreadsheet screen into their products for surreptitious use at the office. We plan to pursue an in-depth product evaluation. Call News Editor Peter Bartolik by phone (800) 343-6474, fax (508) 875-8931 or E-mail (MCI Mail: COMPUTERWORLD) if you learn of Lotus' next target.

NEXT WEEK

The spread of medical imaging technology is a godsend for health care — and a nightmare for the hospital IS departments that must store and transmit all those images. Manager's Journal looks at how Massachusetts General Hospital's radiology department and director of computing **Jaime Taaffe** are meeting this challenge head-on.

Sally Johnson

Some management rulings may get easier once an executive information system is put into place but, as Product Spotlight and Buyers' Scorecard show, deciding on which EIS product to buy can also be a very tough call. Read all about what it takes to construct an EIS and what users think of the top-selling products in the category.

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